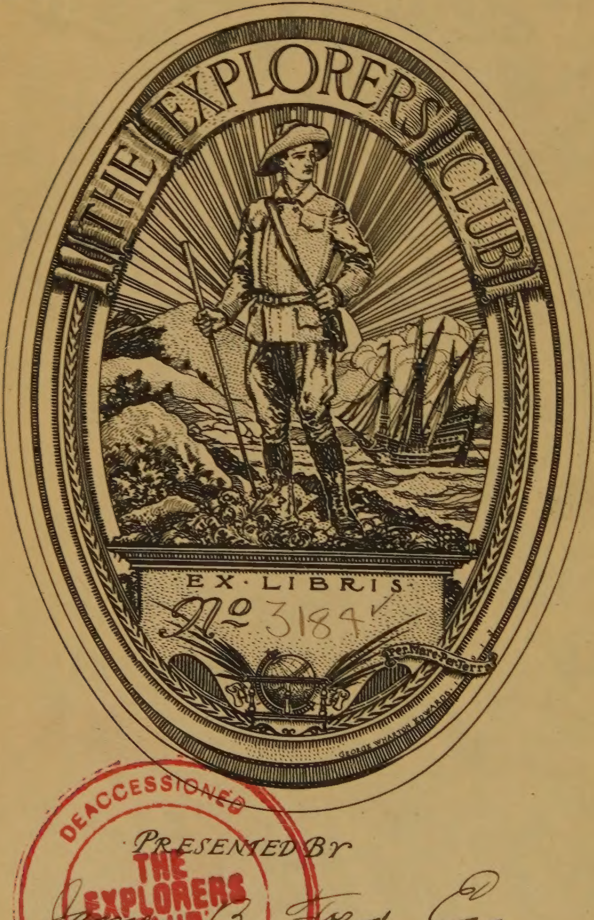
CRANE. TOPEKA.

# LEGEND OF MONTEZUMA.

350

978.9
R51

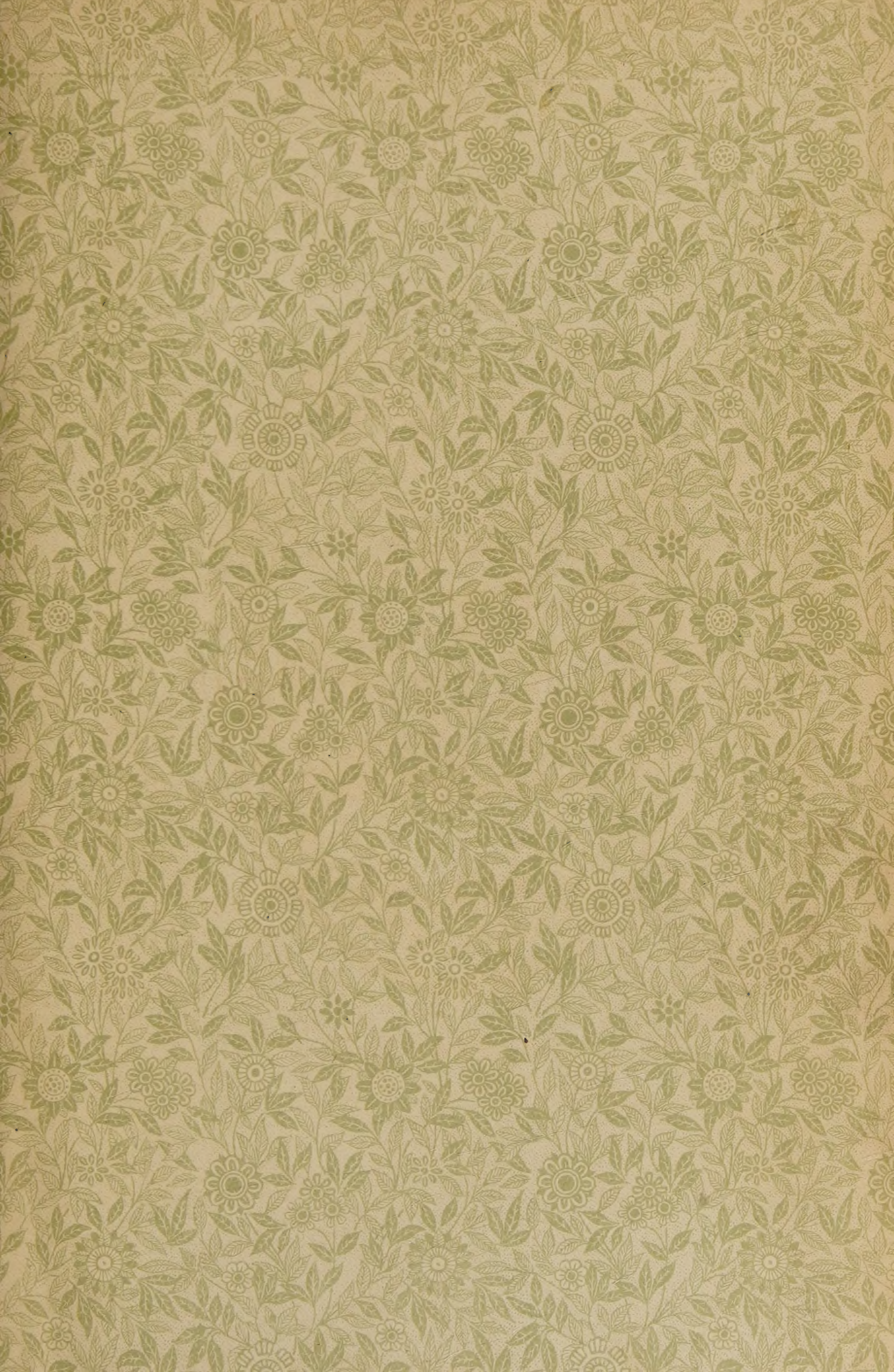


No 3184

PRESENTED BY
James B. Ford, Esq

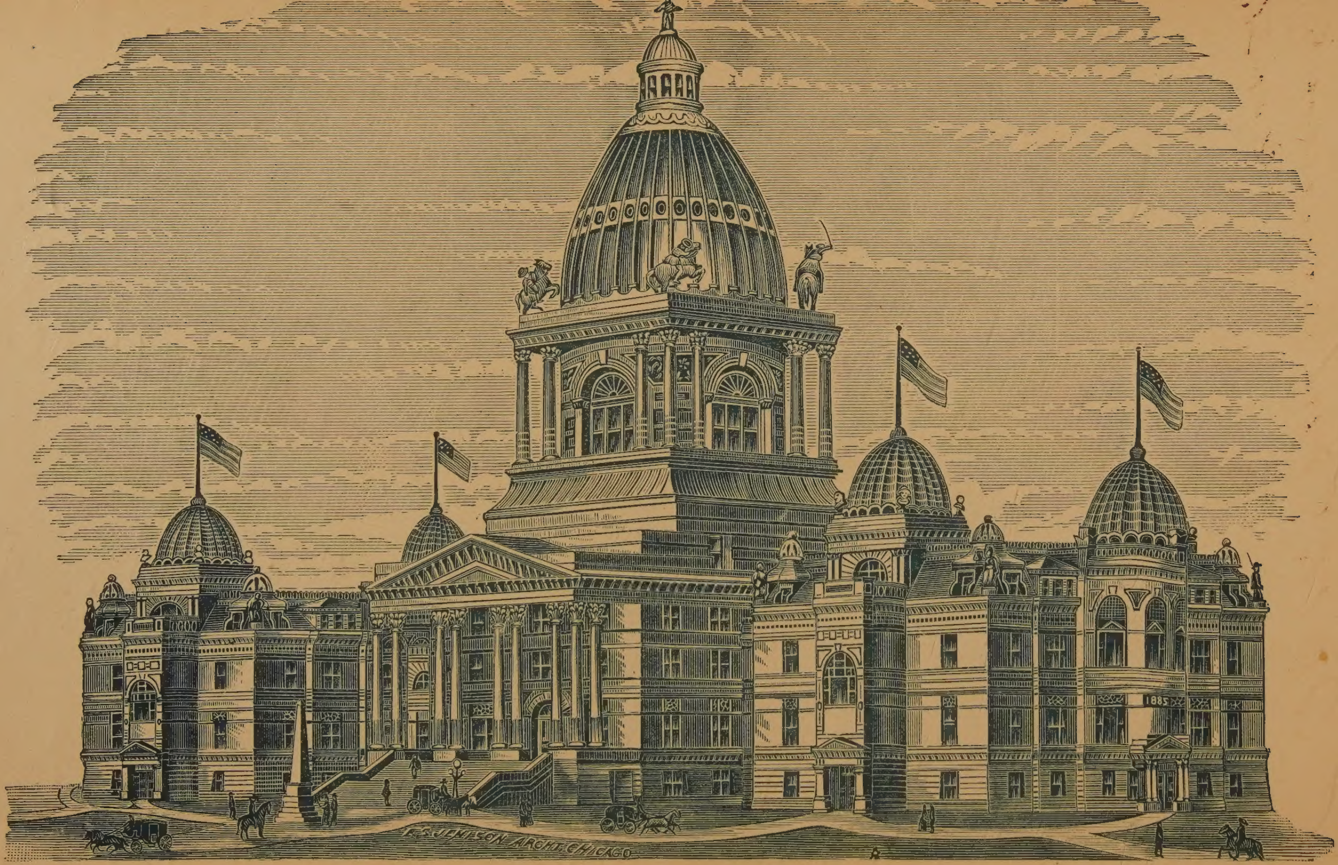
DEACCESSIONED
THE EXPLORERS CLUB
DEACCESSIONED

Case Shelf



4210
400

mrv
250


1885
E. S. JENISON ARCH'T. CHICAGO

THE CAPITOL, SANTA FE.

Gen. W. W. H. Davis

With Compliments
Auth

# AZTLAN.

## The History, Resources and Attractions

—OF—

# NEW MEXICO,

EMBELLISHED WITH

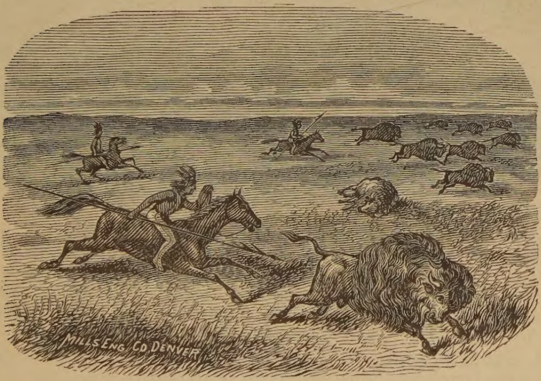
Maps and Seventy-five Characteristic Illustrations;

—BY—

HON. WM. G. RITCH,

WHO FOR TWELVE YEARS SERVED THE TERRITORY EITHER AS
SECRETARY OR GOVERNOR.

EXPLORERS CLUB
JAMES B. FORD
LIBRARY
NEW YORK



SIXTH EDITION.

Twenty-seventh Thousand. Revised and Enlarged.

BOSTON:
D. LOTHROP & CO.
1885.

LEGEND OF MONTEZUMA.

# LEGEND OF MONTEZUMA.

From whence came the tribes who founded and settled the City of Mexico? is a question somewhat involved in doubt and uncertainty. Theories as to locality are not wanting. It is sufficient for the objects of this paper, and which will not be seriously questioned by the well-informed, that the weight of authority is in favor of a country far to the north of the City of Mexico, and known in pre-Columbian times as "Aztlan."

The explorations and discoveries of archæologists, the remains of ancient pueblos and communal houses—some of the latter erected on the grandest scale of any known to the continent—and found in and near that portion of New Mexico and Arizona bounded by the 35th and 37th parallels of latitude, point to this section as the home, for many generations at least, of the aboriginal Mexican or Aztec. This claim is likewise supported in legends and folk lore, in similar habits and customs still found among the pueblos, in old documents, apparently originated in the supreme government of Mexico. The legends, gathered from various sources and connected, read substantially as follows:

Montezuma was born at the pueblo of Teguayo (Santa Fe, according to Shea,) of a young virgin, to whom was given three piñones, one of them to be eaten by herself, and two reserved for the sustenance of herself and grand mother. From the one which she ate, this great monarch was conceived and brought forth, and who, through the will of the Great Spirit, upon arriving at years of discretion, gained distinction and renown. In youth he was not well thought of among his people or kindred. He was poor, and led a vagabond life, was unprepossessing in person, "slobber-mouthed," and obnoxious in his habits. It happened during this period of his life that the caciqué of his pueblo died, and that upon the assembling of the *principales* to elect a successor, they, after repeated councils, failing to agree, finally decreed that the young men of the pueblo should elect. The latter determined the choice by chance, and the honor fell upon this despised one. The office of caciqué, it must be remembered, is one of great responsibility, and is sought to be filled from those noted for their knowledge of tribal lore, and for their wisdom and prudence. The selection, most naturally, was at first received with ridicule and derision. The despised youth, however, surprised and neutralized the revolting spirits by at once giving assurances that they should catch the small game with their hands, and the large game would deliver themselves to their control, as they would witness upon the first day of the next chase.

Near the dawn of the day upon which the latter had been designated, the Great Spirit, appearing to the new caciqué, and finding him sad, spake encouragingly: "Montezuma, why art thou cast down?" Answering, he said: "Great Father, my soul possesseth me in tribulation; this is the day appointed for the chase, and I, as caciqué, must lead. I know not how it may come to pass among my people." And the Great Spirit, answering, said: "Do not despair, thou shalt be successful. Go to thy cabin and search for the blanket and moccasins thy mother left thee before she died." He did as he was bidden, and found them, and they were adorned with turquois. And the Great Spirit, further answering, said to him: "The arms thy mother held for thee are upon the hither side, reënter and search, and thou shalt find a strong bow, and a well-filled quiver made of lion skin, and a head-dress, with a plume of eagle feathers." Whereupon the Great Spirit caused him to be washed and dressed, and he then placed in his hand a rattle made of the hoofs of many species of animals, captured in the chase, and further addressing him, commanded: "Thou shalt sound this rattle to the east, west, north and south as a charm and sign for all animals to surrender to thee upon approach, and which same shall be published by outcry, after the manner of thy people."

And when this was done the people thereof were amazed at the comely appearance of their youthful caciqué, and they queried the verification of his astounding promises with wondering interest, yielding obedience. The clans gathered at the estufas pursuant to outcry, and were directed to prepare for the chase, that they might witness the supernatural powers of their young leader and hunter. Montezuma, entering upon the chase with his people, did as he had been commanded, by sounding his charm to the cardinal points. And it followed that game in abundance was captured, as promised, for their subsistence. And thus it was for eight days.

In further verification of the surprising powers of this caciqué, he prophetically announced the coming of a great rain, and, in anticipation, commanded the people to repair their houses, and for them to plant a greater breadth, that they might harvest more bountifully. Some, doubting, failed to obey, and in consequence, the houses were destroyed, although the harvest was abundant in his pueblo and in the provinces all about.

With these experiences came confidence and enthusiasm, and renown in the adjacent provinces, and finally, general recognition, first as the great caciqué, and then as Montezuma, the great monarch over all.

The same Great Spirit who had heretofore counseled and commanded him, viewing with pleasure the success and recognition received by young Montezuma, revealed to him that a great eagle would appear for him to ride in his exploration of his dominions, and eventually guide him to the place where he would found his future capital and metropolis. Eight days before starting, the Great Spirit selected Melinche, a maiden from the great pueblo of Zuñi, for the wife of Montezuma, and she was declared queen. All being ready, Montezuma, mounted upon his eagle throne, started upon his journey, according to one authority, from the now abandoned pueblo of Pecos, (the latter situate near Rowe, a railway station a few miles east of Santa Fe,) accompanied by a large number of his people To these many were added from other provinces, glad to accept service under so renowned a chief. Wherever he tarried for a time, he founded and peopled a pueblo, from the hosts following him—following him as the wise men of Biblical history followed *their* guiding star.

After the return of many vernal blooms, and after numerous moons of travel, the great monarch arrived (A. D. 1325) at a lake, and whence the guiding eagle alighted upon a prickly pear, growing upon a rock, near the edge of the lake, at the same time seizing a serpent with his beak. Such was the sign which had been revealed whereby it might be known that the site of the pueblo of Tenoctitlan, or the City of Mecitl, or Mexico, had been reached.

The tradition, as brought down, also states that "the Great Spirit gave to Montezuma the power to check the waters with keyes, which were handled by a caciqué of great power, named Tlascala; that here where the site was revealed through the great eagle was founded and built the great pueblo and *casa grande* of the tribes confederated as the Aztec empire, under Montezuma, the great monarch and emperor. This event was annually celebrated down to the coming of the children of the sun, as the European was called, Melinche, the empress, appearing with scepter in hand, all kneeling in homage in the presence of the emperor, who was seated upon a throne of gold. The dance of Melinche is still kept up among some of the New Mexico pueblos.

The tradition of the alighting of the eagle upon the prickly pear will be recognized in the coat of arms of the Republic of Mexico, as that upon which the latter was founded. The same appears in the seal of the Territory of New Mexico, a vignette of which has been happily brought out by the artist, with the difference that the Mexican eagle is nestled confidently under the shadowing wing of the emblem of our own nationality.

COPYRIGHTED.

# PREFATORIAL.

In presenting the fifth edition of Illustrated New Mexico, the undersigned improves the opportunity to express his appreciation of the very favorable reception which has been accorded to the preceding editions. As with the latter, so with the present edition, he has sought to keep apace with the times in representative illustrations and mechanical execution, to keep within the latitude of facts with respect to resources and attractions, as well as history, and not to raise expectations beyond the reasonable bounds of realization. He has sought to give that which is both reliable and valuable, drawn from personal observation largely, as to the body of the work, and from the latest reports of Commissioners as to the counties respectively. He has sought to present that upon which reasonable deductions may be made. It must not be understood by those seeking, in the year 1885, either wealth or homes in the Territory of New Mexico, that they will find the same ready to hand for the taking or occupying, any more than Coronado in 1540 found gold and silver reduced, refined and formulated, and within reach of the hand of the conqueror. Many and varied opportunities are to be found in New Mexico, as will be learned in these pages, for those willing to devote honest, intelligent and persistent effort to the acquiring of a competency. No section of the country presents superior opportunities for the capitalist, or better promise to the laborer. The responsibility of success or failure necessarily rests with the individual.

It will, no doubt, be interesting to not a few whilom residents, who "know all about how it was done" in New Mexico during the years of dreary frontier (ir)responsibility and dense isolation, to be assured of the truth of the statement that the whirligig of time has finally brought annihilation of space through the agencies of steam and lightning. And that the consequent free immigration is superceding those halcyon days of pooling for the few in peonage, peculiar contracts and bedeviled land grants, and upon the inseparable dry-rot arising from a thousand miles of isolation for centuries, and the attending monopoly of class interest.

The old "Kingdom and Province of New Mexico" has been raised out of its centuries of abeyance and suspension, and stands to-day well grafted upon the New West, loyal and ready to contribute its full measure of the elements of empire and general prosperity, in the race for a place among the States of the Union.

The new spirit abroad is progress, made flexible to the necessities of the times, whereby it can the better await and encourage skilled industry, capital and enterprise to utilize its coal, coke and minerals, to discover and develop its varied latent resources, and to encourage an energetic yeomanry to occupy the fertile valleys and grass-covered ranges, where health, wealth and happiness are within the reach of the many. And withal, to plant free schools, conscience and toleration; to cultivate manly self-reliance and a healthy public sentiment.

In conclusion he desires to thank the several contributors hereto; and also to express his obligation to Hon. Samuel Ellison, Territorial Librarian, for valuable historical data, and to the Mills Engraving Company for good work on favorable terms with which to embellish this book.

W. G. RITCH.

Santa Fe, February, 1885.

# MINING CAMPS AND HOW TO REACH THEM.

Abo, 45 m. N. E. of Socorro, on the A., T. & S. F. railroad.

Anthracite coal fields, and magnetic iron, Cerrillos, Santa Fe county; A. T & S. F. railroad.

Arroyo Hondo, Taos county, (iron,) N. E. of Embudo, on the D. & R. G.; 30 miles.

Aztec, Rio Arriba county, S. E. of Durango, Colorado, on the D. & R. G.; 42 miles by stage.

Abiquiu, (copper,) Rio Arriba, N. W. of Espanola, on the D. & R. G.; 25 miles.

Alma, Socorro county, in the Mogollon District, N. W. from Silver City; stage.

Amargo, Rio Arriba county, (coal fields and colliery,) on the D. & R. G. railroad.

Animas District, Grant county, S. W. from Engle, on the A., T. & S. F. railroad.

Apache, Socorro county, N. W. of Engle, A., T. & S. F. railroad.

Amy, Socorro county, W. of Socorro, A., T. & S. F. railroad.

Bernalillo, Bernalillo county, near Bernalillo, A., T. & S. F. railroad.

Bear Spring, 35 miles N. W. of Socorro.

Bonito, in the White Mountains, Lincoln county, 100 miles S. W. of Socorro.

Bosquecito, Socorro county, 5 miles S. E. of Socorro.

Burro Mountains, Grant county, (silver,) N. of Deming, (junction of A., T. & S. F. and S. P.;) stage.

Bromide, Dona Ana county, N. W. of Nutt, on the A., T. & S. F.; 22 miles.

Black Range, Socorro county, W. of Engle, on A., T. & S. F.; 40 to 80 miles; stage.

Bloomfield, Rio Arriba, 50 miles S. of Durango, Col., on D. & R. G.

Blue Canon, San Miguel, — miles from Las Vegas.

Blossburg, (coal,) Colfax county, W. of Raton 5 miles, on branch of A., T. & S. F. railroad.

Bullard's Peak, Grant county, (ruby silver.)

Capitan, Lincoln county, near Lincoln.

Carrizalillo, S. of Deming; 50 miles.

Caballo Mountains, W. of Rincon; 30 miles, A., T. & S. F. railroad.

Clairmont, Socorro county, in Mogollon District, N. W. from Silver City; stage.

Carlisle, Grant county, (gold.)

Cooney, Socorro county, in Mogollon District, N. W. from Silver City; stage.

Cooper, Santa Fe county, (copper;) 20 miles N. E. Glorieta on A., T. & S. F. railroad.

Council Rock, Socorro county; 35 miles S. W. of Socorro, on A., T. & S. F. railroad.

Carbonate, Taos county; Embudo, on D. & R. G.

Copper Mountains, Taos county, N. E. Fernandez de Taos; 12 miles.

Carisillo or Stonewall, Grant county, S. of Deming; 32 miles; stage.

Cook's Peak, Grant county, 20 miles N. of Deming.

Central City, Grant county, N. W. of Deming; 40 miles; stage.

Council Rock, Datil Mountains, W. of Socorro.

Coyote, Mora county, N. E. of Watrous, on A., T. & S. F. railroad; 27 miles.

Carbonateville, Santa Fe county, S. of Santa Fe and 6 miles N. of Cerrillos station, A., T. & S. F. railroad.

Cerrillos, Santa Fe county, (anthracite coal, and iron,) near Cerrillos station, A., T. & S. F. railroad.

Cow Springs, Grant county, N. W. of Deming; 25 miles.

Chloride, in the Black Range, Sierra county, (silver glance;) coach from Engle, N. W.

Chloride Flat, near Silver City.

Canon del Agua, Santa Fe county, (copper,) 18 miles from Cerrillos station, on A., T. & S. F. railroad; stage.

Carthage, (coal), Socorro, 8 miles E. of San Antonio, on branch of A., T. & S. F. railroad. Coking ovens at San Antonio.

Chaves, Socorro county, 20 miles N. W. of Socorro.

Cimarron City, Colfax county, (magnetic iron and coal,) N. W. of Springer, on A., T. & S. F. railroad; stage.

Chama River Placers, Rio Arriba county, 6 miles N. W. of Abiquiu, and 40 miles N. W. of Espanola, on the D. & R. G. railroad.

Datil, Socorro county, 75 miles S. W. of Socorro.

Dolores, (Old Placers, gold,) Santa Fe county, S. of Cerrillos; 6 miles; stage.

Defiance, (coal fields and colliery,) A. & P. railroad.

Eureka, Grant county, (stamp mill,) 20 miles S. of Separ, on S. P. railroad.

Elizabethtown, (gold,) Colfax county, 45 miles N. W. of Springer, on A., T. & S. F. railroad; stage.

Florida Mountains, Grant county, 15 miles S. E. of Deming.

Glorieta Camp, Grant county, Pinos Altos.

Gonzales, Santa Fe county, 20 miles S. of Santa Fe.

Gallinas, 40 miles W. of Socorro, on A., T. & S. F. railroad.

Georgetown, Grant county, (gold,) 50 miles N. W. of Deming, or 54 miles N. E. of Lordsburg, on S. P.; stage.

Gillespie, Grant county, S. E. from Lordsburg, (silver.)

Glorieta, Santa Fe county, (copper,) on A., T. & S. F. railroad.

Gallinas, Lincoln county, 68 miles E. of Socorro; stage.

Good Hope, (gold,) Rio Arriba county, 20 miles N. of Tres Piedreas, on D. & R. G.

Gallup, (coal fields and colliery,) A. & P. railroad.

Golden, (gold and copper,) Santa Fe county, S. of Cerrillos; 12 miles; stage.

Gold Hill, San Miguel county, on A., T. & S. F. railroad.

Grafton, in Black Range, Sierra county; stage; N. W. from Engle, on A., T. & S. F.

Hansonburgh, Oscuro Mountains, 45 miles S. E. of Socorro.

Hell Canon, Bernalillo county, S. E. of Albuquerque, on A., T. & S. F. railroad; 25 miles.

Head Stone District, Rio Arriba county, (two stamp mills, gold,) 20 miles W. of Tres Piedreas, on D. & R. G.

Hillsboro, Sierra county, (gold,) N. of Lake Valley, on A., T. & S. F., 12 miles.

Hanover, Grant county, (iron,) N. W. of Deming; 48 miles; stage.

Hungry Gulch, Santa Fe county; N. E. Cerrillos, on A., T. & S. F. railroad.

Humboldt, Socorro county, in Caballo Mountains of Socorro.

Hueco, Dona Ana county, E. of Las Cruces.

Iron Mountain, 55 miles W. of Socorro.

Jicarrillas, Lincoln county, E. of Socorro; 88 miles; stage to White Oaks.

Jarilla, Dona Ana county, E. of Las Cruces; 42 miles; stage.

Kingston, (silver,) Sierra county, N. W. of Nutt on A., T. & S. F.; stage; 35 miles, via Lake Valley.

Lone Pine, Santa Fe county, (gold,) S. of Cerrillos on A., T. & S. F. railroad; 15 miles; stage to Golden.

Limitar, Socorro county, W. of Limitar, on A., T. & S. F. railroad; 4 miles.

Ladrones, Socorro county, W. of La Joya on A., T. & S. F. railroad; 12 miles.

Lake Valley, (silver,) Sierra county, N. W. of Nutt on A., T. & S. F. railroad; 12 miles; by branch railroad.

Lone Mountain, Grant county, N. E. of Lordsburg on S. P.; 40 miles; or N. W. of Deming 40 miles; stage.

Lietendorf's, Grant county, (argentiferous galena and copper,) S. E. of Lordsburg on S. P.; 8 miles; stage.

Los Animas, Dona Ana county, E. of Las Cruces.

Little Burro, 55 miles S. W. of Socorro.

La Joyita, Socorro county, 25 miles W. of Socorro.

La Joya, Socorro county, S. E. of La Joya; 20 miles; A., T. & S. F. railroad.

Manzano, Valencia county, E. of Belen; 20 miles; A., T. & S F. railroad.

Mount Taylor, Valencia county, near Grant's; A. & P. railway.

Manchester, Lincoln county, near White Oaks.

Magdalena, Socorro, (silver and lead,) S. W. of Socorro 25 miles; on branch of A., T. & S. F.

Mogollon, Socorro, (gold,) N. W. of Deming 90 miles; stage via Silver City.

McGregor, Taos county, N. E. from Embudo on D. & R. G.

Miembres, E. of Silver City.

Mora, Mora county, W. of Watrous; 20 miles; A., T. & S. F. railroad.

Moreno, (gold,) Colfax county, N. W. of Springer on A., T. & S. F. railroad.

Mineral City, San Miguel county, near Las Vegas.

Monero, Rio Arriba county, (coal fields and colliery,) on D. & R. G. R. R.

Nambe Camp, Santa Fe county, (mica and coal,) 18 miles N. of Santa Fe; A., T. & S. F. railroad.

New Placers, Santa Fe county, (gold and iron,) S. of Cerrillos station; 15 miles; stage to Golden.

North San Simon, Grant county, (silver and copper,) S. P.; near Stein's Pass.

Nogal, Lincoln county, (gold,) S. E. of Socorro, via White Oaks; 100 miles.

Nacimiento, (copper,) Bernalillo county, W. of Bernalillo on the A., T. & S. F. railroad; 50 miles.

Oscuras, E. of Socorro; 34 to 40 miles.

Organs, Dona Ana county, (gold), E. of Las Cruces, A., T. &. S. F. railroad, 18 miles; stage.

Ortiz Mills, Santa Fe county, S. of Cerrillos; 4 miles.

Pueblo, Socorro county, W. of Socorro; 30 miles; stage.

Palomas, Socorro county, S. W. of Engle on the Rio Grande.

Pecos, Santa Fe county, near Rowe; A., T. & S. F. railroad.

Petaca, Rio Arriba county, (mica,) 9 miles W. of Siervuelita; D. & R. G. railroad.

Picuris, Taos, N. E. of Embudo, D. &. R. G. railroad.

Pinos Altos, Grant county, (gold,) N. W. of Deming; stage via Silver City.

Percha, (silver,) Sierra county, N. W. of Lake Valley, on A., T. & S. F. railroad; stage; 23 miles.

Pecos River, Santa Fe county, 20 miles N. E. of Glorieta on A., T. & S. F. railroad.

Puerco River, Bernalillo county, (coal and iron,) A. & P. railroad.

Randall, Dona Ana county, (iron,) near A., T. & S. F. railroad.

Raton, Colfax county, (coke and coal,) A., T. & S. F. railroad.

Red Cloud, Gallenos mountains, Lincoln county, (iron, copper, silver and gold,) S. of Santa Fe, and 100 miles N. E. of Socorro.

Richmond, Grant county, (coal,) 35 miles N. W. from Lordsburg on L. & C. railroad.

Rock Corral, (copper,) 12 miles S. E. Santa Fe.

Rio Hondo, Taos county, (gold,) N. E. of Embudo, D. & R. G. railroad.

Rincon, San Miguel county, N. W. of Las Vegas; 20 miles.

Rincon, Rincon on A., T. & S. F. railroad.

Rio Bonita, Lincoln county, S. E. of Socorro.
Rio de la Vaca, San Miguel county, near Fulton, A., T. & S. F. railroad.
Rio Grande Gold Placers, N. W. of Taos.
Rio Colorado Placers, N. of Embudo, D. & R. G. railroad.
San Antonio, Socorro county, (50 coking ovens for Carthage coal,) A., T. & S. F. railroad.
San Acacia, Socorro county, 15 miles N. of Socorro.
Santa Fe Gypsum Bed, near Lamy, A., T. & S. F. railroad.
Salt Lakes, in Socorro and Valencia counties.
Santa Fe Canon Coal, 2 miles E. of Santa Fe.
Santa Fe Marble Quarries, 2 miles E. of Santa Fe.
San Francisco Camp, Socorro county, 150 miles S. W. of Socorro.
San Felicita, 2 miles E. of Socorro.
Salada, 35 miles N. W. of Socorro.
Santa Fe Flagging Quarries, 5 miles S. W. of Santa Fe.
Springer, Colfax county, (cement,) A., T. & S. F. railroad.
South Manzana, Socorro county, 50 miles N. E. of Socorro.
South Socorro, 8 miles S. W. of Socorro.
Sheldon, Socorro county, 35 miles N. E. of Socorro.
San Mateo, 50 miles S. W. of Socorro.
Santa Fe Red Sandstone Quarry, 2 miles N. of Santa Fe.
Socorro, Socorro county, W. of Socorro; 3 miles.
San Andreas, Socorro county, (copper,) S. E. of Grama, A., T. & S. F. railroad; 30 miles.
San Cristobal, San Cristobal Mountains, near Crocker, A , T. & S. F. railroad.
Spiegelberg, Valencia county, E. Belen, A., T. & S. F. railroad; 22 miles.
South San Simon, Grant county, S. of San Simon. S. P.; 4 miles.
Spring Hill, Socorro county, W. of La Joya, A., T. & S. F. railroad.
Santa Rita, Grant county, (copper,) N. W. of Deming; stage via Silver City.
Shakespeare, Grant county, (gold,) S. of Lordsburg. S. P.; 3 miles; stage.
Silver City, Grant county, N. W. of Deming; 50 miles· branch railroad.
Silver Flat, Silver City, A., T. & S. F. railroad.
Stein's Peak, Grant county, on Lordsburg & Clifton railway.
Steeple Rock, Grant county, N. W. of Lordsburg, S. P.; 40 miles.
Sweepstake, San Miguel county.
San Pedro, Santa Fe county, (copper smelter, S. of Cerrillos, A., T. & S. F. railroad; 16 miles; stage.
Sacramento, Dona Ana county, E. of Las Cruces.
Telegraph, Grant county, on the Rio Gila, (silver;) stage via Silver City.
Taos, Taos county, (coal and iron,) Fernandez de Taos.
Tijeras Canon, Bernalillo, (coal and copper,) N. E. of Albuquerque; 20 miles.
Tres Hermanas, Grant county, S. of Deming; 25 miles.
Turquesa, Santa Fe county, (Turquois, gold and silver,) S. of Santa Fe; 25 miles; near Cerillos district.
Tulerosa, Dona Ana county, N. E. of Las Cruces.
Ute Creek, Colfax county, N. W. of Springer; 40 miles; coach via Cimarron.
Virginia, Grant county, S. of Lordsburg, S. P.; 10 miles; stage.
Victoria, Grant county, S. of Gage, S. P.; 4 miles.
Vera Cruz, Lincoln county, (gold and coal,) S. E. of Socorro; 80 miles, stage via White Oaks.
Vallecitos, Santa Fe county, Cerrillos; 6 miles.
Water Canon, Socorro county, S. W. of Socorro; 20 miles.
White Oaks, Lincoln county, (gold and coal,) E. of Socorro; 80 miles; stage
White Mountain, S. W. of White Oaks; 22 miles.

# NEW MEXICO RAILROADS.

## SUMMARY OF MILEAGE.

NOTE:—First passenger train into New Mexico brought the Colorado Legislature to Otero, February 13, 1879. Within the five years following 1,200 miles of railroad were built in the Territory.

| | | |
|---|---|---|
| NEW MEXICO AND SOUTHERN PACIFIC. | | |
| Main line from Colorado line to Deming | 481 | |
| Santa Fe and El Paso Branches | 95 | |
| Branches to Las Vegas, and coal fields at Raton, Carthage, Silver City, Lake Valley and Magdalena | 104 | |
| | | 680 |
| ATLANTIC AND PACIFIC. | | |
| Albuquerque to Arizona line | 174 | |
| Gallup Coal Siding | 5 | |
| | | 179 |
| SOUTHERN PACIFIC. | | |
| El Paso to Arizona line | 182 | |
| Lordsburg & Clifton Branch | 50 | |
| | | 232 |
| DENVER AND RIO GRANDE. | | |
| Espanola to Antonito | 79 | |
| Antonito to Amargo | 85 | |
| | | 164 |
| Total miles of railroad in the Territory, January 1st, 1885 | | 1,255 |

## STATIONS AND DISTANCES UPON NEW MEXICO RAILROADS.

(Telegraph Stations are indicated by a *.)

### NEW MEXICO & SOUTHERN PACIFIC RAILROAD.

Under lease to Atchison, Topeka & Santa Fe R. R.)

| *Dist. from Kas. City.* | *Dist. from Deming.* | TO | *Dist. from Santa Fe.* | *Distance between Stations.* |
|---|---|---|---|---|
| ....... | 1149 | Kansas City, Mo | 869 | ......... |
| ....... | 1133 | Atchison, Kan | 853 | ......... |
| 67 | 1082 | Topeka,* (Kansas State Capital) | 802 | 66.5 |
| 201 | 948 | Newton* | 667 | 134.6 |
| 286 | 863 | Great Bend,* (Arkansas River) | 582 | 85.0 |

### NEW MEXICO & SOUTHERN PACIFIC RAILROAD—*Continued.*

| *Dist. from Kas. City.* | *Dist. from Deming.* | TO | *Dist. from Santa Fe.* | *Distance between Stations.* |
|---|---|---|---|---|
| 369 | 780 | Dodge City,* (near Ft. Dodge) | 499 | 83.0 |
| 486 | 662 | State Line of Kansas and Colorado | 381 | 118.1 |
| 548 | 601 | Las Animas,* (Ft. Lyon, U. S. Military Post) | 320 | 61.3 |
| 571 | 578 | La Junta, Colo.* (Junc. for Pueblo and Denver) | 397 | 23.0 |
| 665 | 497 | Trinidad* | 216 | 81.5 |
| 668 | 481 | New Mexico and Colorado boundary, (Tunnel) | 210 | 15.5 |
| 675 | 474 | Raton,* (Colfax Co. and coal fields, eating station) | 194 | 7.5 |
| 681 | 468 | Otero, (cattle range) | 189 | 5.3 |
| 692 | 457 | Maxwell, " | 176 | 11.1 |
| 702 | 447 | Dorsey, " | 167 | 10.2 |
| 709 | 440 | Dover, " | 159 | 7.3 |
| 716 | 433 | Springer,* Co. seat; (sta. for Cimarron and Elizabetht'n) | 153 | 6.5 |
| 726 | 423 | Ocate, (Mora county) | 143 | 10.3 |
| 736 | 413 | Evans | 133 | 9.7 |
| 741 | 408 | Wagon Mound,* (scene of Indian massacre, 1854) | 128 | 5.5 |
| 751 | 398 | Tipton, (Agricultural valley) | 118 | 10.0 |
| 758 | 391 | Shoemaker, (horticulture) | 111 | 7.0 |
| 766 | 383 | Watrous,* (sta. for Mora, Tiptonville and Fort Union) | 103 | 7.9 |
| 775 | 374 | Onava, (San Miguel county) | 94 | 9.1 |
| 786 | 363 | Las Vegas,* (County seat, Hot Springs, trade center) | 83 | 10.9 |
| 791 | 358 | Romero, (stone quarries) | 78 | 4.8 |
| 799 | 350 | Sulzbacher | 70 | 8.2 |
| 805 | 344 | Bernal, (Bernal Peak) | 64 | 5.5 |
| 815 | 334 | Pecos, (Rio Pecos crossing) | 54 | 10.2 |
| 823 | 326 | Fulton, (Pecos valley) | 46 | 7.7 |
| 832 | 317 | Rowe,* (Ice, east of Pecos ruins, Santa Fe county) | 37 | 9.0 |
| 837 | 313 | Levy, (timber) | 33 | 4.6 |
| 841 | 308 | Glorieta,* (Union victory—battle, 1862) | 28 | 4.7 |
| 849 | 300 | Manzanares, (valley of the Rio Galisteo) | 20 | 8.1 |
| 851 | 298 | Lamy,* (Junction for Santa Fe) | 18 | 1.8 |
| 860 | 316 | Santa Fe,* (Capital, trade center, Sanitarium, Arch-Episcopal See and Military Headquarters | ...... | ........ |
| 862 | 291 | Ortiz, (mines) | 29 | 11.4 |
| 870 | 279 | Cerrillos,* (coal fields; station for Golden; mines) | 36 | 7.4 |
| 872 | 277 | Waldo, (coal fields) | 38 | 2.0 |
| 876 | 273 | Rosario | 42 | 6.3 |
| 881 | 268 | Wallace,* (Bernalillo Co.; Ind. Pueblo; R. G. valley) | 48 | 5.2 |
| 888 | 261 | Elota | 55 | 6.7 |
| 892 | 257 | Algodones, (Viniculture) | 59 | 4.4 |
| 903 | 246 | Bernalillo,* (Agriculture, wool; sta. for Jemez Spa) | 69 | 10.3 |
| 910 | 239 | Alameda, (fine agricultural valley) | 77 | 7.5 |
| 918 | 231 | Albuquerque,* (A. & P. shops; trade center; Co. seat.) | 85 | 7.9 |
| 928 | 221 | Isleta, (Puebla; Valencia county, R. R. bridge) | 95 | 9.5 |
| 931 | 218 | A. & P. Junction,* | 98 | 3.2 |
| 938 | 211 | Los Lunas, (County seat; fine farms) | 105 | 7.5 |
| 948 | 201 | Belen,* (broad, agricultural bottoms) | 115 | 10.0 |
| 958 | 191 | Sabinal, (Socorro county) | 125 | 10.0 |
| 969 | 180 | La Joya | 136 | 11.0 |
| 981 | 168 | Alamillo, (rich bottom lands) | 147 | 11.4 |
| 994 | 155 | Socorro,* (Co. seat; sta. for Magdalena and Oscura Mts.) | 160 | 12.9 |
| 1007 | 142 | San Antonio, (branch R. R. to coal fields; coke ovens) | 174 | 12.6 |
| 1014 | 135 | Valverde, (battle field—1862; broad valley) | 181 | 6.9 |

## NEW MEXICO AND SOUTHERN PACIFIC—*Continued.*

| *Dist. from Kas. City.* | *Dist. from Deming.* | TO | *Dist. from Santa Fe.* | *Dist. bet. Stations.* |
|---|---|---|---|---|
| 1021 | 128 | San Marcial,* (sta. for Ojo Caliente and dining) | 188 | 6.6 |
| 1028 | 121 | Pope, (stock ranges) | 195 | 7.4 |
| 1037 | 112 | Lava, (Journada del Muerto) | 204 | 9.2 |
| 1047 | 102 | Crocker, (J. del M.) | 214 | 10.0 |
| 1059 | 90 | Engle,* (Sta. for Black Range Mines) | 226 | 11.7 |
| 1067 | 82 | Cutter, (J. del M.) | 234 | 8.0 |
| 1079 | 70 | Upham, (stock range) | 246 | 12.0 |
| 1090 | 60 | Grama, (stock range) | 256 | 10.4 |
| 1097 | 53 | Rincon,* (Jnc. for Las Cruces, Dona Ana Co., El Paso) | 263 | 6.9 |
| 1101 | 48 | Hatch, (Rio Grande crossing) | 267 | 4.4 |
| 1110 | 39 | Sellers, (stock range) | 276 | 8.9 |
| 1117 | 32 | Watson | 284 | 7.5 |
| 1121 | 28 | Nutt,* (branch railroad for Lake Valley) | 288 | 3.9 |
| 1134 | 15 | Florida | 301 | 13.0 |
| 1142 | 7 | Coleman, (Grant Co., stock range) | 309 | 7.6 |
| 1149 |  | Deming,* (S. P. Jnc., Sta. for Hudson's Spa & Silv. City) | 316 | 7.3 |

## EL PASO BRANCH.

| *Dist. from Kas. City.* | *Dist. from El Paso.* | FROM | *Dist. from Santa Fe.* | *Dist. bet. Stations.* |
|---|---|---|---|---|
| 1097 | 77 | Rincon,* (Junc. for Lake Valley and Deming) | 263 | ....... |
| 1105 | 69 | Tonuco, (stock range) | 271 | 8.0 |
| 1113 | 60 | Randall (iron) | 279 | 8.5 |
| 1116 | 58 | Selden,* (Ft. Selden, U. S. military post) | 282 | 2.6 |
| 1125 | 49 | Dona Ana, (broad, rich bottom lands, Shalam colony) | 291 | 8.6 |
| 1131 | 44 | Las Cruces,* (Co. seat. Sta. for Mesilla, grape lands) | 297 | 5.5 |
| 1142 | 32 | Mesquite, (Mesilla valley) | 308 | 11.4 |
| 1155 | 20 | Anthony, (agricultural lands) | 321 | 12.5 |
| 1164 | 11 | Montoya, (viniculture) | 330 | 8.9 |
| 1175 | 0 | El Paso,* (Texas, Junc. T. P., and for Mexico) | 340 | 10.8 |

## ATLANTIC AND PACIFIC RAILROAD.

(New Mexico Division.)

| *Dist. from Albuquerque........* | From Santa Fe (by rail over New Mexico and Southern Pacific), TO | *Dist. from Santa Fe.* | *Dist. bet. Stations...* |
|---|---|---|---|
|  | Albuquerque,* (Initial point and shops of A. & P. Rly.) | 85 | ......... |
| 9.6 | Isleta, (Indian Pueblo and Rio Grande crossing) | 95 | 9.6 |
| 12.7 | A. & P. Junction* | 98 | 3.1 |
| 23.4 | Luna | 109 | 10.7 |
| 34.0 | Rio Puerco, (bridge, stock range, coal and iron) | 119 | 10.6 |
| 47.2 | San Jose, (coal) | 132 | 13 2 |
| 59.8 | El Rito | 145 | 12.6 |

## ATLANTIC & PACIFIC RAILROAD — *Continued.*

| *Dist. from Albuquerque.* | **From Santa Fe (by rail over New Mexico & Southern Pacific), TO** | *Dist. from Santa Fe.* | *Distance between Stations.* |
|---|---|---|---|
| 66.0 | Laguna,* (Ind. pueblo; Presb'n Mis.; 16 m. Acomo pueblo) | 151 | 6.2 |
| 72.0 | Cubero | 157 | 6.0 |
| 83.4 | McCarty's, (stock) | 168 | 11.4 |
| 88.0 | Acomo | 173 | 4.6 |
| 96.1 | Grants,* (Old Ft. Wingate, stock) | 181 | 8.1 |
| 107.2 | Blue Water, (stock range) | 192 | 11.1 |
| 121.8 | Chavez | 207 | 14.6 |
| 130.2 | Continental Divide, (timber) | 215 | 8.4 |
| 136.1 | Coolidge,* (Bacon Springs, stock range) | 221 | 5.9 |
| 146.2 | Wingate,* (U. S. military post; coal oil; sta. Zuni P.) | 231 | 10.1 |
| 156.0 | Coal siding; branch 5 miles | ...... | ........ |
| 157.7 | Gallup, (Colliery) | 242 | 11.5 |
| 165.6 | Defiance, (Colliery) | 250 | 7.9 |
| 174.0 | Manuelito, (25 miles to Navajo agency) | 258 | 8.4 |
| 186.9 | Allantown, Arizona Territory | 273 | 12.9 |
| 199.7 | Sanders | 286 | 12 8 |
| 212.7 | Navajo Springs | 299 | 13.0 |
| 215.3 | Billings | 312 | 12.6 |
| 238.1 | Carrizo | 323 | 12.8 |
| 250.9 | Holbrook, (sta. for Moqui P., Ft. Apache, St. Johns) | 336 | 12.8 |
| 263.1 | St. Joseph | 348 | 12.2 |
| 277.0 | Breeds | 367 | 13.9 |
| 401.0 | Ash Fork,* (stage for Prescott and Ft. Verde) | 486 | ........ |
| 466.0 | Peach Springs,* (13 miles to Grand Canon) | 551 | ........ |
| 575.0 | The Needles,* (California) | 660 | ........ |
| 616.0 | Fenner,* | 819 | ........ |
| 815.0 | Mojave,* | 900 | ........ |
| 1196.0 | San Francisco,* | 1281 | ........ |

## DENVER & RIO GRANDE RAILWAY.

(New Mexico Division.)

| *Dist. from Denver.* | **From Santa Fe, Northerly, TO** | *Dist. from Santa Fe.* | *Distance between Stations.* |
|---|---|---|---|
| 379 | Espanola,* (Broad agricultural valley) | 28.0 | ........ |
| 365 | Chamita, (Opposite San Juan Pueblo, agriculture) | 39.8 | 4.8 |
| 358 | Alcade, (agriculture) | 37.1 | 6.3 |
| 351 | Embudo,* (Sta. for Taos, Rio Grande bridge) | 45.1 | 8.0 |
| 343 | Comanche | 49.6 | 4.5 |
| 346 | Barranca,* (Sta. for Joseph's Ojo Caliente) | 52.6 | 3.0 |
| 336 | Caliente, (timber) | 59.6 | 7.0 |
| 324 | Servuelita, (9 miles to Petaca mica mines) | 62.5 | 12.9 |
| 314 | Tres Piedras,* (timber; sta. for Head Stone mining dist.) | 72.5 | 10.0 |
| 306 | No Agua | 79.6 | 7.1 |

## DENVER AND RIO GRANDE RAILWAY.—*Continued.*

| *Dist. from Denver.* | TO | *Dist. from Santa Fe.* | *Dist. bel. Stations.* |
|---|---|---|---|
| 297 | Volcano, (stock range) | 88.7 | 9.1 |
| 290 | Palmilla | 95.7 | 7.0 |
| 279 | Antonito,* (Junction for the San Juan country) | 107.2 | 11.5 |
| 250 | Alamosa,* (San Louis Valley) | 135.9 | 28.7 |
| 226 | Fort Garland,* (U. S. Military Post) | 159.9 | 24.0 |
| 206 | Veta Pass,* (Mule Shoe Bend) | 180.4 | 20.5 |
| 170 | Cuchara* | 217.5 | 36.1 |
| 120 | South Pueblo,* (Junction for Leadville) | 266.0 | 49.5 |
| 75 | Colorado Springs,* (Colorado College) | 310.4 | 44.4 |
| 0 | Denver,* (State Capital of Colorado) | 338.0 | 75.2 |

### SAN JUAN DIVISION.

| *Dist. from Denver.* | TO | *Dist. from Santa Fe.* | *Dist. bel. Stations.* |
|---|---|---|---|
| 289 | Lava | 117.4 | 10.2 |
| 298 | Bighorn | 126.4 | 9.0 |
| 304 | Sublette,* (timber) | 132.0 | 5.6 |
| 309 | Toltec, (Gorge and Tunnel) | 137.3 | 5.3 |
| 317 | Osier* | 145.3 | 8.0 |
| 321 | Los Pinos, (coal) | 149.0 | 3.8 |
| 329 | Cumbreo* | 157.4 | 8.3 |
| 331 | Coxo | 159.2 | 1.8 |
| 338 | Lobato, (timber) | 166.9 | 7.7 |
| 343 | Chama,* (Sta. for Tierra Amarilla, agricultural valley) | 171.1 | 4.2 |
| 348 | Willow Creek | 176.1 | 5.0 |
| 353 | Azotea | 180.9 | 4.8 |
| 362 | Monero, (collieries) | 190.1 | 9.2 |
| 365 | Amargo,* (collieries) | 193.7 | 3.6 |
| 402 | Arboles* | 230.4 | 36.7 |
| 425 | Ignacio* | 253.0 | 22.6 |
| 450 | Durango,* (Sta. for Farmington and Los Animas Valley) | 278.8 | 25.8 |

## SOUTHERN PACIFIC.

(New Mexico.)

| *Dist. from San Fran.* | **From Santa Fe, via N. M. and Southern Pacific,** TO | *Dist. from Santa Fe.* | *Dist. bet. Stations.* |
|---|---|---|---|
| 1286 | El Paso,* (Texas, Rio Grande Valley) | 340 | ...... |
| 1271 | Strauss, (stock range) | ....... | 15 |
| 1198 | Deming,* (Junction A. T. & S. F., and to Silver City) | 310 | 73 |
| 1178 | Gage, (stock range) | 330 | 20 |
| 1138 | Lordsburg,* (Mines, station for Shakspeare and Clifton) | 370 | 40 |
| 1104 | San Simon,* (Mines, Arizona Territory) | 410 | 34 |
| 1064 | Wilcox* | 450 | 40 |
| 1024 | Benson,* (A. T. & S. F. Junction for Gulf of California) | 460 | 40 |
| 978 | Tucson* | 536 | 46 |
| 913 | Casa Grande* | 691 | 65 |
| 731 | Yuma* | 783 | 162 |
| 482 | Los Angeles* | 1032 | 248 |
| 241 | Goshen* | 1278 | 241 |
|  | San Francisco | 1514 | 241 |

## SOUTHERN PACIFIC RAILROAD.

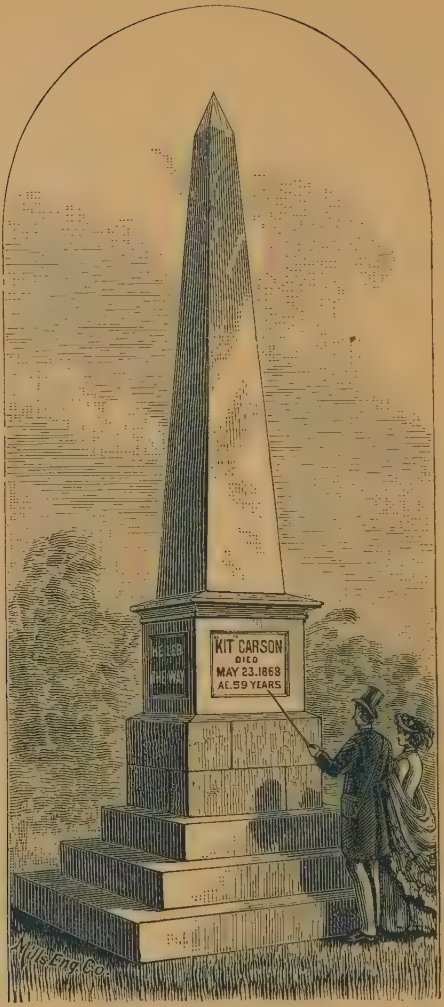
(New Mexico.)

| Dist. from San Francisco. | From Santa Fe, via Rincon and Rio Grande Valley, TO | Dist. from Santa Fe. | Distance between Stations. |
|---|---|---|---|
| 1286 | El Paso, Texas,* | 340 | ........ |

From hence, Southerly, via Galveston, Harrisburg & San Antonio Railroad,

| Dist. from El Paso. | TO | Dist. from Santa Fe. | Distance between Stations. |
|---|---|---|---|
| 12 | Ysleta, (Indian Pueblo, Texas) | 352 | 12.0 |
| 21 | San Elezario | 361 | 9.0 |
| 53 | Camp Rice | 393 | 32.0 |

OVERLAND TRADE.



CARSON MONUMENT, SANTA FE.
ERECTED BY THE GRAND ARMY OF THE REPUBLIC,
DEPARTMENT OF NEW MEXICO, 1885.

# NEW MEXICO.

## HISTORICAL.

WATCHING FOR MONTEZUMA.

The Territory of New Mexico is anomalous, in that it is the seat of the antipodes of civilization upon the continent.

The "free-for-all" chance in the race of modern energy, enterprise and prosperity, with the coming of steam transportation in its mighty, irresistible, onward course, has here peaceably met, face to face, mediæval conservatism, and the crooked stick plows and industrial methods of the Ptolemies.

Here are not only found the descendants and representatives of the old Latin civilization, but likewise the old Mexican, or native races, still living in domestic simplicity and peacefulness, tilling the soil and hunting the buffalo in season, and dwelling in permanent homes and communal houses, erected of sun-dried brick and stone, closely clustered around a common plaza, and all much the same, as will be recognized, as when visited and

### DESCRIBED BY ANTONIO DE ESPEJO, THREE CENTURIES AGO.

Espejo says: "From Conches, situated on the western border of Texas, (probably centering around where the river of the same name, on modern maps, debouches into the Rio Grande,) they followed their journey for the space of fifteen days without meeting any people, all that while passing through wood and groves of pine trees (pinon) bearing such fruit as those of Castile. At the end whereof, having traveled, to their judgment, four-score leagues, they came unto a small hamlet or village (pueblos at or near Paso del Norte, or San Elizario) of few people, in whose poor cottages, covered with straw, they found many deer skins as well dressed as those of Flanders, with great store of excellent white salt. They gave our men good entertainment for the space of two days while they remained there, after which they bare them company about twelve leagues, into certain great towns, always traveling by the river called the Rio del Norte, abovesaid, till such time as they came into the country called by them New Mexico. Here all along the shore of the said river grew mighty woods of poplar, being in some places four leagues broad, and great store of walnut trees, and vines like those of Castile.

"Having traveled two days through the said woods of poplar and walnut trees, they came to ten towns, situated on both sides of the said river, besides others which they might see further out of the way, wherein there seemed to be great store of people, and those which they saw were above ten thousand persons. In this province the people received them very courteously, and brought them to their towns, whereas they gave them great plenty of victuals and hens of the country, with many other things, and that with good will. Here they found houses very well built, with gallant lodgings, and in most of them were stoves for the winter season. Their garments were of cotton and of deer skins, and the attire both of men and women is after the manner of the Indians of the kingdom of Mexico. But the strangest thing of all was to see both men and women wear shoes and boots with good soles of neats leather, a thing which they never saw in any other part of Mexico. The women keep their hair well combed and dressed, wearing nothing else upon their heads. In all these towns they had Caciques, who governed their people like the Caciques of Mexico, with sergeants to execute their commands, who go through the town proclaiming with a loud voice the pleasure of the Caciques, commanding the same to be put in execution.

"In all their arable grounds, whereof they have great plenty, they erect on the one side a little cottage or shed standing upon four studs, under which the laborers do eat and pass away the heat of the day, for they are a people given to labor, and do continually occupy themselves therein. The weapons that they use are strong bows and arrows, headed with flints, which will pierce through a coat of mail, and macanas, which are clubs of half a yard long, so set with sharp flints that they are sufficient to cleave a man asunder in the midst; they use also a kind of shields made of raw hides."

Espejo also records coming to the province of "Tiguez, containing sixteen towns," one of which was named "Paola." (The latter, now an extinct pueblo, situate west of the Rio Grande, near

Bernalillo.) He likewise visited the province of Quires (Santo Domingo and vicinity) having 14,000 souls, of Cia (Zia) having 20,000, "and containing eight market places and better houses, the latter plastered and painted in divers colors," who "presented our men with many curious mantles, and victuals, excellently well dressed." Zia was "deemed more curious, of greater civility and better government than any other pueblo hitherto seen." Ameies (Jemez), with 30,000 population, was next visited, and which, "like unto their neighbors of the former province (Zia), being as well provided of all necessaries as they, and of as good government," and then Acoma, "situate upon a high rock, and reached by steps cut in the rocks," and having a population of 6,000 persons. He also visited Zuñi, and another great province further west containing 50,000 population. Espejo speaks frequently of their houses, and of some that were four stories high, and generally writes approvingly of their cultivation of the soil, and the great industry and provident care of the people, and of their generous hospitality, to the extent of feeding and caring for his whole command for days.

PUEBLO INDIAN COMMUNITY HOUSE—TAOS.

The account of Captain Espejo proves very clearly that the Pueblo Indian, in his native civilization of 1583, like the Pueblo Indian of three centuries later, was within the borders of civilization, in fact, if not ranked as such. These people, as a distinct race, now number about 10,000 residing in this Territory. Originally, according to Spanish writers, they numbered among the hundreds of thousands. After the revolution of 1680, numbers of them emigrated to the Pacific slope, a body of them emigrated to Moqui and founded a new pueblo, still occupied, and known by its original name, "Tegua;" some joined the wild tribes, and large numbers became merged into the civilization of their conquerors, and now generally known on this continent as Mexicans. Of the masses of the people of the Territory, mention will be made further on.

## LIFE AND PROPERTY SECURE.

When people contemplate emigrating to any particular locality, the first and most important inquiry is whether life and property are secure. In all ages and countries, history shows that the bad element floats with the tide of emigration, in a percentage larger than that which remains in the old and organized communities. New Mexico has not been an exception to this rule. The geographical position, and isolation from the States by reason of a want of railroad communications, have hitherto caused bad men from other localities to congregate within her borders, who, with the warlike Apaches, have given the people a great deal of trouble, and have inflicted upon the Territory very serious injuries. While in the past hostile Indians have made frequent raids upon outlying settlements, murders and robberies by white men have been numerous. Since October, 1881, hostiles have not made a demonstration in New Mexico, and "rustlers" and desperadoes have scarcely put in an appearance.

It is a fact neither well known nor appreciated, that at no time within the past generation has there existed in any material sense at Santa Fe, Albuquerque and Las Vegas, any greater danger from attack by Indians than at San Francisco, Chicago or Boston. The same is and has been true with respect to nearly every town of prominence during the past ten years; and, to-day, is barely less true of every settlement in the Territory.

The courts are in the vigorous and faithful discharge of their duties, and criminals are arrested, convicted and punished as successfully as can be expected in a country so large and sparsely populated, and where mountains and cañons afford such facilities for escape and concealment.

Twenty militia companies are organized, armed, supplied with ammunition, and well officered, and so located as to promptly and effectively protect the people in nearly every part of the Territory. Composed as they are of men interested in the country, they are reliable and efficient, and their presence tends to deter bad men from acts of violence and crime. The Territory is commendably peaceable and orderly, and people who desire to come here are confidently assured that they will be safe in their lives, property and business.

## RAILWAYS.

The means of transportation to and within New Mexico are furnished by the following constructed and contemplated railways:

The Atchison, Topeka & Santa Fe railroad, starting from Kansas City, has been completed to Deming, on the Southern Pacific, and on southwesterly across the State of Sonora to Guaymas, a port on the Pacific coast, in the republic of Mexico. At Rincon it has a track following the Rio Grande to El Paso, in the State of Texas, where it connects with the Mexican Central railroad, now completed from Paso del Norte to the city of Mexico.

The general direction of the road from the Colorado State line at Raton Pass to Rincon Junction is nearly south. From Rincon Junction to Deming its direction is southwesterly, and to the Texas State line south southeast. Connection is made with Santa Fe by an eighteen mile branch from Lamy Junction.

Branches to the coal beds adjacent have been constructed from Raton and San Antonio, and extensive coking ovens established. Also, branches to the Hot Springs at Las Vegas, Magdalena, Lake Valley and Silver City, respectively, have been built, and make daily connections with the passenger trains on the main line.

Other branches from the main line have been projected to connect with various outlying points, and which are either in course of construction or will be constructed in the early future. The length of line constructed in New Mexico, belonging to the A. T. & S. F. system of railways, is 594 miles.

The Atlantic and Pacific railroad, (New Mexico division,) beginning at Albuquerque, on the Rio Grande, extends in a westerly direction to the western boundary of New Mexico, and on to the Pacific coast at San Francisco. The Grand Canon of the Colorado river of the West is one of the scenes of special interest near this line. Running in connection with the A. T. & S. F. railroad, it constitutes one of the great through lines between the East and West.

The Denver and Rio Grande railroad enters the Territory from the north near Antonito. Of the San Juan division of said road, running west, there are about 60 miles of track in this Territory. The Toltec gorge and tunnel, and their mountain surroundings upon this line in the northern edge of the Territory, constitute

THE TOLTEC TUNNEL.

some of the grandest and wildest scenery upon the continent. Travelers take this road for the San Juan country, which is a recent settlement, and constitutes one of the best watered and richest of the agricultural portions of New Mexico.

The New Mexico division of the road extends from near Antonito to Espanola, 28 miles north of the city of Santa Fe, running nearly due south, with 80 miles of track. Connection by daily stages is made with Santa Fe.

The Southern Pacific railroad extends entirely across the southwestern portion of the Territory, running almost due east from Stein's Pass, where it enters the Territory, and connect at Lordsburg for the Clifton copper mines, at Deming with the A. T. & S. F. system, and at El Paso with the Texas Pacific; it has 155 miles of track.

The Texas Pacific railroad, which is now completed to El Paso, Texas, has continuous railway connection through the State of Arkansas to St. Louis, and through Texas and Louisiana to Galveston and New Orleans.

The Texas, Santa Fe and Northern railroad, in course of construction, connects with the Denver and Rio Grande railroad at Espanola and runs southeasterly to the city of Santa Fe. The building of the road to the latter point is well under way; from thence it is projected to the Pecos river, and to Galveston and other gulf ports and to Laredo, connecting with the Mexican National railway. The Denver and New Orleans railway gives promise of building its line through eastern New Mexico.

Roads are also projected and chartered from Trinidad, in the State of Colorado, to Las Vegas and the Rio Grande, and from Socorro, on the Atchison, Topeka and Santa Fe railroad, to the Black Range; the latter now completed to the Mogollon mining camps.

The Gulf, Colorado and Santa Fe railroad is in course of construction from Galveston, and is expected to reach the city of Santa Fe in the early future.

The Atlantic and Pacific railroad, from the Indian Territory west, will doubtless be built, and will strike the eastern boundary of the Territory near the Canadian river, and Albuquerque, on the Rio Grande. [See tables of railway stations and distances, among first pages of this book.]

### THE OVERLAND TRADE

amounted in 1831 to $15,000; in 1846 to $1,752,250, and in 1876 to $2,108,000. This trade has increased to a great extent, supplying now sufficient freight for four railroads, and will doubtless increase so as to render projected railroad enterprises profitable.

## AREA AND BOUNDARIES.

The Territory has an average breadth of 335 miles; length of eastern boundary, 345 miles; length of western boundary, 390 miles; the whole covering an area of 121,201 square miles. By geographical divisions, it is bounded on the north by the State of Colorado, on the east by the public domain and the State of Texas, on the south by the State of Texas and the Mexican States of Chihuahua and Sonora, and on the west by the Territory of Arizona.

The Territory is divided into thirteen counties, as follows:

### NORTHERN TIER.

Colfax, with Springer as county seat.
Taos, with Fernando de Taos as county seat.
Rio Arriba, with Tierra Amarilla as county seat.

### CENTRAL GROUP.

Mora, with Mora as county seat.
San Miguel, with Las Vegas as county seat.
Santa Fe, with Santa Fe as county seat.
Bernalillo, with Bernalillo as county seat.
Valencia, with Los Lunas as county seat.
Socorro, with Socorro as county seat.
Sierra, with Hillsboro as county seat.

### SOUTHERN TIER.

Lincoln, with Lincoln as county seat.
Dona Ana, with Las Cruces as county seat.
Grant, with Silver City as county seat.

## BUSINESS CENTERS.

Santa Fe is the capital of the Territory, and military headquarters, and a commercial, monetary, educational, religious and political center. Albuquerque, Las Vegas, Socorro, Silver City and Deming have been and still are developing educationally, socially and otherwise very rapidly, and are each bidding stoutly for commercial supremacy. The following are enterprising and growing towns: Raton, Georgetown, Las Cruces, San Antonio, La Mesilla, Springer, Los Lunas, Mora, Tierra Amarilla, Farmington, Lincoln, White Oaks, Taos, Kingston, Cerrillos, Lordsburg, Lake Valley, Hillsboro, Watrous and Richmond. All are either on railroads or stage routes. They vary in population from a few hundred in the last named to several thousand in the first named.

The population of the Territory, with the recent increase, may be set down at 135,000, or a fraction above one person to the square mile.

---

## THE PEOPLE.

The masses of the people are simple in their tastes and habits, peaceable and law abiding. Village settlements are the rule, this mode of living having been naturally adopted under past necessities as a means of mutual protection against hostile Indians. They are generally engaged in agriculture on a small scale, and in attending to herds and flocks. In a few instances agriculture is carried on quite extensively, and the flocks of sheep and herds of cattle are very large. The people engaged in the mining industry are generally those who have come to the Territory recently.

The people of New Mexico, both native and emigrants from the States, have frequently given substantial evidence that they are a well-disposed, patriotic and liberty-loving people.

In illustration of their love of liberty, and friendship for the Government, the following instances are mentioned:

General Kearney occupied the country in 1846 without meeting an armed force or material opposition of any kind, although a few months later, under gross misrepresentations by a few restless spirits, a speck of war was developed, which, however, was easily suppressed.

In the convention, called in October, 1848, to consider questions with respect to local self-government, the convention adopted unanimously a petition and resolutions, among which were the following, as translated:

> We, the people of New Mexico, respectfully petition Congress for the speedy organization by law of a Territorial civil government for us.

Then a resolution:

> We do not desire to have domestic slavery within our borders, and until the time shall arrive for an admission into the Union as a State, we desire to be protected by Congress against their introduction amongst us.

The resolutions have the more force when it is remembered that the best citizens of the Territory, including the late Donaceano Vigil, a former Governor, were elected to and served in that convention, and that more than two-thirds of the members were born in the Territory.

From 1848 to 1860 militia and volunteers of the Territory, under the command of native officers, were engaged in several successful Indian campaigns, especially those of 1854 and 1859.

In the same spirit and from like motives, the Territory contributed to the Union armies over 6,000 volunteers during the war of the rebellion, who performed arduous, gallant and effective service against rebels and hostile Indians, and notably at Apache cañon, where the Confederate troops were so completely discomfited that they at once abandoned the Territory.

Thus at their homes, in legislation, and in the army have the people given evidence of their love of liberty and fealty to the government placed over them by conquest.

The native population are not only law-abiding themselves, but are a reliable element to be employed in repelling Indian raids and suppressing domestic disorders. They are seldom guilty of heinous crimes. Most of the desperadoes who have heretofore infested the Territory were adventurers from other localities.

## IMMIGRATION.

Immigration, since the advent of railroads, has been and now is rapidly on the increase. More than 15,000 people have come to the Territory for permanent settlement since the census of 1880. They are from every State and Territory in the Union, and a few from many of the foreign nations. As a body they are, like the mass of those who came here from 1846 to 1880, intelligent, patriotic, energetic, economical, honest and orderly.

The following table shows the distribution and locality of population according to the census of 1880.

NEW MEXICO.

| COUNTIES. | *Total.* | *Male.* | *Female.* | *Native.* | *Foreign.* | *White.* | *Colored.** |
|---|---|---|---|---|---|---|---|
| The Territory........ | 119,565 | 64,496 | 55,069 | 111,514 | 8,051 | 108,721 | 10,844 |
| Bernalillo ............. | 17,225 | 9,087 | 8,183 | 16,842 | 383 | 12,514 | 4,711 |
| Colfax .................. | 3,398 | 1,973 | 1,425 | 3,144 | 254 | 3,375 | 23 |
| Dona Ana.............. | 7,612 | 3,958 | 3,654 | 4,743 | 2,869 | 7,537 | 75 |
| Grant .................... | 4,539 | 2,844 | 1,695 | 2,536 | 2,003 | 4,404 | 135 |
| Lincoln.................. | 2,513 | 1,552 | 961 | 2,303 | 210 | 2,448 | 65 |
| Mora...................... | 9,751 | 5,033 | 4,718 | 9,542 | 209 | 9,423 | 328 |
| Rio Arriba............ | 11,023 | 5,735 | 5,288 | 10,827 | 186 | 10,215 | 808 |
| San Miguel............ | 20,638 | 11,048 | 9,590 | 20,061 | 577 | 20,439 | 199 |
| Santa Fe............... | 10,867 | 6,023 | 4,844 | 10,209 | 658 | 18,388 | 479 |
| Socorro.. ............... | 7,875 | 4,280 | 3,595 | 7,506 | 369 | 7,804 | 71 |
| Taos ........ ............ | 11,029 | 6,021 | 5,008 | 10,872 | 157 | 10,401 | 628 |
| Valencia................ | 13,095 | 6,942 | 6,153 | 12,919 | 176 | 9,773 | 3,322 |

*Including in the Territory 56 Chinese and 9,790 Indians and half-breeds; in Bernalillo county, 2 Chinese and 4,492 Indians and half-breeds; in Colfax

# FACE OF THE COUNTRY.

The surface is marked with mesas, valleys and mountains, foothills, bluffs, cañons and mountain parks. The mountain ranges, from north to south generally, break into spurs, buttes and foothills, diminishing in altitude, and graduating into mesas or high table lands.

ABOVE THE TIMBER LINE.

In the northern part of the Territory the Culebra range looms up to the east into the Raton spur, and to the south is known, according to proximity to local towns, as Taos, Mora and Santa Fe mountains; to the west is the Conejos and Tierra Amarilla ranges. Southeast of the old city of Santa Fe and east of the Rio Grande, a broken range runs south, variously known as the Placer mountains, the Sandia, Manzana, Oscura, Jumanes, Fra Cristobal, Caballo, San Andres and Organs, the latter crossing the southern border of the Territory near El Paso. To the east of the above range is a series of high table-lands reaching to the mesa, known as the Llano Estacado, or Staked Plains, and broken by the low mountains and peaks named on the maps as the Gallinas, Jacarillas, Carrizo, Capitan, Sierra Blanca, Gaudalupe, Jarilla, Hueco and Sacramento.

On the west side of the Rio Grande, from the isolated peak near the northern boundary, known as the San Antonio mountain,

---

county, 17 Indians and half-breeds; in Dona Ana county, 5 Chinese and 45 Indians and half-breeds; In Grant county, 40 Chinese and 9 Indians; in Lincoln county, 2 Chinese and 3 Indians; in Mora county, 86 Indians and half-breeds; in Rio Arriba county, 799 Indians and half-breeds; in San Miguel county, 5 Chinese and 96 Indians and half-breeds; in Santa Fe county, 2 Chinese and 359 Indians and half-breeds; in Taos county, 583 Indians and half-breeds; in Valencia county, 3,301 Indians and half-breeds.

another broken range runs south as follows, and known locally as Petaca, Valles, Jemes, San Mateo, Ladrones, Oso, Magdalenas, Socorros, Gallinas, Southern San Mateo, Pinos Altos, Burro, Black and Mimbres ranges, and the Florida mountains near the southern border.

Farther to the west, and near the Arizona line, appears the continental divide, composed of mountains and peaks variously known as Tunicha, Chusca, Zuñi, Datil, San Francisco, Escudilla, Tulerosa, Luera, Mogollon, Pyramid, Stein's, Animas and Peloncillo.

These mountains, equably distributed as they are, furnish a large water supply, a great amount of timber, and are excellent shelter for stock during storms.

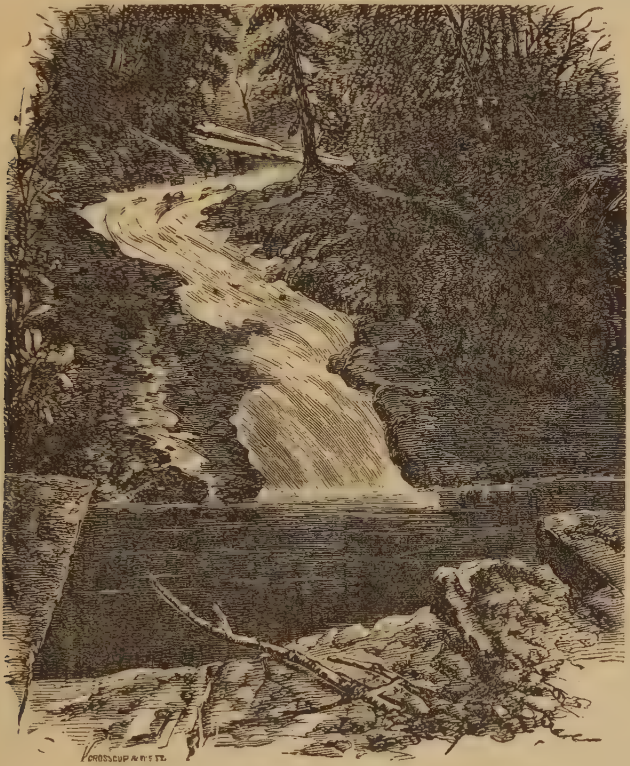
## ALTITUDE.

The mesas and table-lands in the northern part of the Territory are generally about 6,000 to 6,500 feet above the sea level. In the central portion of the Territory the mesas attain an elevation of about 5,000 feet, and in the south about 4,000 feet. The fall of the Rio Grande, from the northern border of the Territory to the point where it cuts the New Mexico, Texas and Chihuahua boundary, is about 3,500 feet. The ranges generally rise from 2,000 to 5,000 feet above the mesas and high table-lands. Mount Baldy, 18 miles from Santa Fe, is 12,202 feet high. Mount Taylor, in the Sierra Mateo, is 11,200 feet high. Raton Pass, 7,893 feet; Costillo, 7,774 feet; Tierra Amarilla, 7,455 feet; Taos, 6,950 feet; Cimarron, 6,489 feet; Las Vegas, 6,452 feet; Glorieta, 7,587 feet; Santa Fe, 7,044 feet; Bernalillo, 5,104 feet; Albuquerque, 4,918 feet; Fort Wingate, 7,037 feet; Kingston, 7,400 feet; Socorro, 4,655 feet; Hudson's Hot Springs, 5,003 feet; Lordsburg, 4,200 feet; Ft. Cummings, 4,778 feet; Stein's Pass, 4,446 feet; Silver City, 5,946 feet; Ft. Stanton, 5,800 feet; Las Cruces, 3,844 feet. The mining camps generally are at an elevation of from 7,200 to 8,500 feet. Head Stone Mining Camp, Rio Arriba county, has an altitude of 9,900 feet.

At Kansas City, 849 miles east of Santa Fe, the altitude is 763 feet; Denver, 338 miles north, 5,240 feet; El Paso, Texas, 340 miles south, 3,362 feet, and Tuscon, Arizona, 526 miles southwest is 2,542 feet altitude.

## WATER-COURSES AND EXTENT.

The Rio Grande is the main river of the Territory. It rises in southwestern Colorado, at an elevation of 11,920 feet; it runs southerly and centrally through the Territory, mainly through a broad valley. Its tributaries are, from the west: The San Andres, the Chama, Jemez, Puerco of the East, Alamosa, Chuchillo Negro, Animas and Polomas; from the east: Costilla, San Cristobal, Hondo, Taos, Picuris, Santa Cruz, Namba, Santa Fe, Galisteo, Tuerto and Alamilla.



ON THE RIO SANTA FE.

The northeastern portion of the Territory is drained by the Canadian river (Rio Colorado), emptying into the Arkansas river; its tributaries are: Cimarron, Mora, Sapello, Concho, Pajarito, Ute, Revuelta and Trujillo.

The Pecos river rises in the Santa Fe range, and drains the central, eastern and southeastern part of the Territory, emptying into the Rio Grande. Its principal tributaries are: The Vaca, Tecolote, Bernal, Gallinas, Salado, Yeso, Spring, Hondo, Feliz, Atrasco, Pañasco, Seven Rivers, Black and Delaware.

The northwestern part of the Territory is drained by the Rio San Juan, with tributaries as follows: Pinos, Navijo, Animas, La Plata and Mancos. The Puerco of the West, the Zuñi and Tulerosa rivers are in the central west.

The Rio Miembres, Rio Gila and San Francisco are in the extreme southwest of the Territory.

Numerous small streams, arroyas and springs are to be found all over the Territory.

## COAL AND IRON.

Coal and iron each exist in large bodies in New Mexico, and have been found in nearly every county in the Territory. The three great families of coal—anthracite, bituminous and lignite (or brown coal) are each represented in large areas.

### COAL.

The only well-defined anthracite coal, both as to good quality and presence in paying quantities, found west of the Alleghany Mountains, are the anthracite measures of Santa Fe county. The best coking coals known and the best coke produced in the United States, between the Mississippi river and the Pacific coast, are from the bituminous coals of Cerillos in Santa Fe, Raton in Colfax, and Carthage in Socorro counties. These coal measures are traced from Raton, on the northern boundary of the Territory, into Mora, San Miguel, Santa Fe, Bernalillo, and south into the southern tier of counties. They extend for a distance of two hundred and fifty miles in a direct line, and are of indefinite width.

Coal has been found in Taos county, adjoining Colfax; northern and central Santa Fe is underlaid with coal, and similar coal is found in Grant county. Other coking coals exist in the Territory, especially in Grant and Lincoln counties, but are not yet sufficiently developed and defined to be classified. The brown coals, or lignites, of central Rio Arriba and Bernalillo counties, and traced to western Bernalillo and Valencia counties, and into the edge of Arizona, have been opened at Gallup and Defiance, in Bernalillo county, upon the Atlantic & Pacific railroad, and at Amargo and Monero, in Rio Arriba county, upon the Denver & Rio Grande railroad. These coals have proved excellent for heating purposes. It must not be forgotten that the railroads in this Territory are new, of only five years' growth, and that the opening of collieries has barely commenced.

It would probably not be overstated to say that at least one-quarter of New Mexico's area of 121,000 square miles is underlaid with coal; and that a large percentage of this ranks among the best for metallurgical and calorific purposes, and is superior to any found elsewhere in either the Rocky Mountains or on the Pacific slopes, the Republic of Mexico, Texas or Kansas.

The supreme importance of coal, as a recognized factor in relation to the material prosperity of kingdoms and countries, is of modern recognition. The following statistics are taken from "Appleton's Cyclopædia" and the "Mineral Resources of the United States, of 1883:"

Great Britain stands first in coal production. From a prohibition of its use in London by one of its early kings, the production of coal in the kingdom grew to 64,661,401 gross tons of 2,240 pounds, in the year 1854, much the largest proportion of the increase being within the decade immediately preceding. The annual coal production of the same country for 1881 had increased to 154,184,300 tons.

The coal production of Belgium, in 1855, was 8,500,000 tons, which had increased in 1881 to 17,500,000 tons.

The total annual coal product of the United States, which was 16,513,123 tons in 1860, has more than quadrupled, reaching 87,023,134 gross tons in 1882, according to the last report.

Statistics of the coal output, prior to a generation ago, are not at hand, if, indeed, they can be obtained. This growth had its rise in the development and use of steam as a motive power, in the metallurgical and mechanical arts, illuminating gas, petroleum, and the large number of articles of commerce derived from volatile matter obtained in distillation, and all of which has grown into a present fact within the memory of men still in active and vigorous life.

By reason of the superior quality of its coals, the immensity of its fields—including superior coking coal and anthracite beds—a combination sole, except as to similar coal measures adjoining the Territory in southern Colorado, within a radius of over 1,000 miles,

### ENTITLES NEW MEXICO TO RANK AMONG THE GREAT COAL-PRODUCING CENTERS OF THE EARTH.

It has already four of the great lines of railroads, given in detail elsewhere, centering upon the Territory from cardinal points, and making direct all-rail connections with the Mississippi valley, Gulf of Mexico and the Atlantic commercial centers, with the Rocky Mountain system to the north, with Arizona, the Pacific slopes and seaports of the West, and with the Gulf of California and the city of Mexico in our sister republic.

The Territory of Arizona, one of the great mineral-bearing centers, is without coking coal, so far as yet discovered and developed. The State of California has no coal within its borders of workable value except its Mount Diablo coals. The latter, it must be understood, according to the last Government report, is enclosed in a line of outcroppings of only ten or twelve miles in length, and "the area within which the mines have been profitably worked is of far more limited extent." The coal is non-coking.

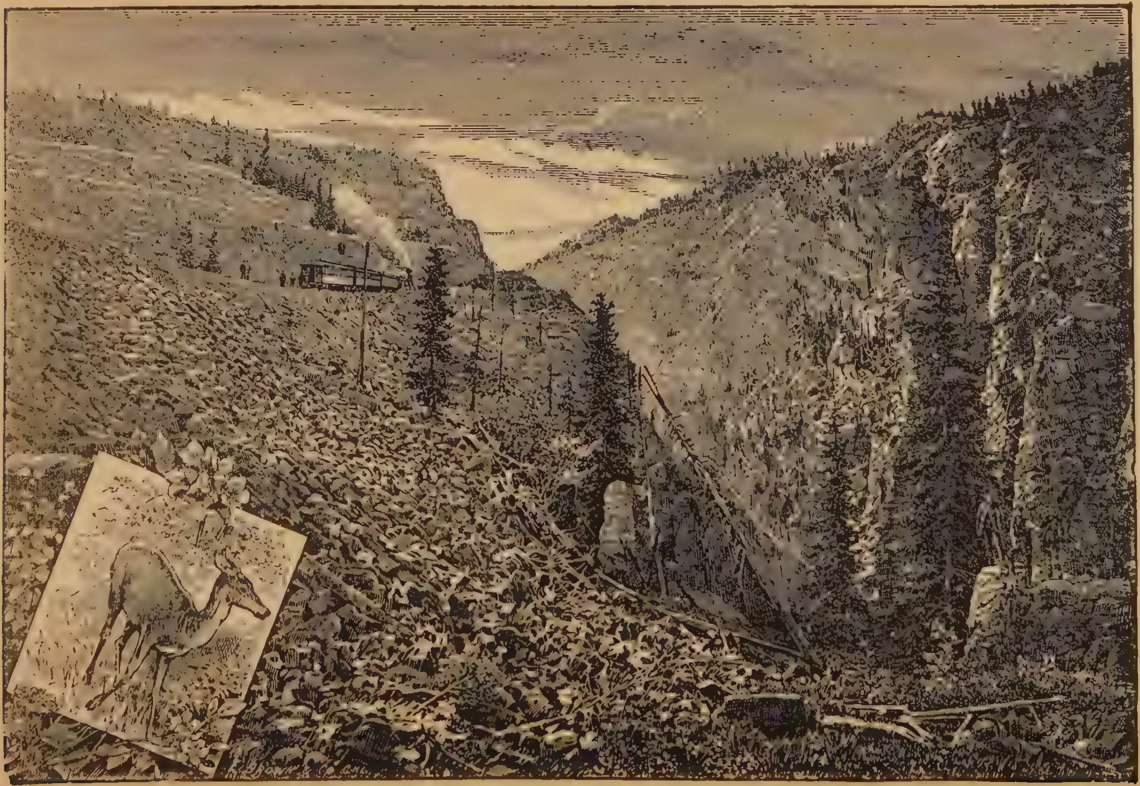
The average cost of mining the coal sent to market has been five dollars and seventy-five cents, as against one dollar a ton, the price at which Santa Fe coal can be profitably placed upon the dump, or loaded upon cars whenever the railroad, only two miles away, shall be extended to the mines. The total amount of Mount Diablo coal mined in 1882 was 113,255 tons, a decrease in yield of nearly one-half since 1874, in which year the output had reached its maximum of 206,255 tons. The amount of coal thus mined in California constitutes only a small percentage of the supply necessary to the demands of the State. The annual receipts of coal at San Francisco alone, during the year, were 882,896 tons. Of this amount over 500,000 tons were brought from Great Britain, British Columbia and Australia. The prices of the various coals at San Francisco, per ton of 2,240 pounds, is as follows:

| | |
|---|---|
| Australian, at wholesale | $6 75 |
| Liverpool, at wholesale | 6 00 |
| Welsh, at wholesale | 6 25 |
| Coos Bay, Oregon, at wholesale | 7 00 |
| Lehigh lump, (Wilkesbarre and Scranton, Pa.) | 18 00 |
| Cumberland, (superior bituminous) | 13 00 |

It is only ten years ago that coke was brought from Connellsville, Pa., a distance of 2,500 miles, for metallurgical uses, in the treatment of the ores of Utah and Nevada. And this Pennsylvania coke followed the use of charcoal, which had cost thirty cents a bushel. Both, however, were supplanted upon the establishment of coking ovens in the Raton fields.

With these facts before the business world, and the further fact that there are, with trifling exceptions, no good coals upon the Pacific coast from Alaska to Chili, a distance of 6,000 miles, no very astute prophet is required to foretell the future relations of New Mexico coal to the Pacific slope, with its large steam marine and immense mining interests. What is thus true with respect to California is also true in a more pronounced degree as to central and northern Mexico, which produces $40,000,000 of bullion, and, in the absence of good coal, reduces its silver by the feet of mules in the wasteful *patio* process.

The States of Texas and Kansas, also, will be, to a great extent, customers for New Mexico coal.



TOLTEC GORGE, WEST OF THE TUNNEL, D. & R. G. RY., RIO ARRIBA CO.

The great advantage of New Mexico, however, consists in its supreme advantages for home manufacturing, based upon superior coal and iron, and its numerous useful metals, and other items of resources in commercial demand.

## IRON.

Magnetic iron and limestone is found in close proximity to the Santa Fe anthracite coal. The same is also true of iron ore and coal on the Rio Puerco, in Bernalillo county. Large beds of good iron are found in Taos, San Miguel, Socorro, Dona Ana and Grant counties, and all more or less near to coal and limestone.

Iron, more universally than any other article of commerce, enters into the composition of manufactured products in general consumption, and hence is most universally in demand as a raw material. We will, therefore, consider briefly its manufacture.

The first consideration, after having found the ore in paying quantities, is fuel and flux near at hand. The three found in proximity of each other, and the condition is an output at minimum cost, and iron free from cinder and refuse under transportation.

The second consideration is the market, which is governed by the price at which it is sold, and the expense of transportation. The iron manufactured on the ground where the fuel and flux and ore is found is, as above stated, reduced and refined at the minimum of expense. Long hauls, either of the manufactured article, or of any one or more of the raw materials used in its production, add materially to expense, especially in heavy articles of inconsiderable relative value, such as railroad and bar iron and steel, nails, horse shoes and castings.

The Territory of New Mexico thus possesses the conditions of superior ores in the immediate proximity to superior fuel and flux, coupled with a near market, unfavored with the conditions of economical production and transportation. With all these conditions in favor of this Territory, it naturally follows that it will at no distant day become largely the source of supply for iron and steel, as well as coal and other productions indigenous and manufactured, of the western belt of the North American continent, of which New Mexico is the geographical, and the growing railroad center. Herein lie opportunities, as logical as facts can make them. The outcome rests with man — with the emigrant possessed variously of energy, skill and capital.

## MINERALS AND PRECIOUS STONES.

The mineral wealth of *New Mexico* has been known to exist for centuries. Indeed the traditions and knowledge existing among the village Indians of Mexico at the date of the conquest by Cortez was of a great people and of great mineral wealth in Aztlan, as the country far to the north, since named New Mexico, was known early in the sixteenth century. It was less than a decade later than the landing of Cortez that the shipwrecked Cabeza de Vaca and party started from the gulf coast, somewhere near Galveston, probably Trinity bay, upon the forlorn hope of reaching the settlements of their countrymen in Mexico. During the weary wanderings of this stout-hearted and persevering party, they penetrated to the heart of the continent, at a point nearly twenty degrees of latitude north of the city of Mexico, and nearly the same distance north of the last settlement of the Spanish colonists. The journey was beset with all the perils and uncertainties of a trackless wilderness inhabited by savage tribes, upon a tortuous route of thousands of miles, occupying five years in traversing. Nothing but the most subtle tact, indomitable will, dauntless courage, and endurance of steel, could possibly have surmounted the difficulties. And not then, we are bound to believe, had the wanderers found less of humanity and hospitality than was found, as related, among a people living in houses, tilling the soil, and possessing provident care and methods of government, not to be despised among more pretentious civilizations. And thus it was that the first Europeans set foot upon the soil of New Mexico, and gathered information which, when reported to the Viceroy of Mexico, confirmed the wonderful stories and traditions that had previously been related of a country far to the north, set on foot the expeditions of Niza, Coronado, Rodriguez and Espejo, and gave to the world the first knowledge of the mineral wealth of the country, and that historical significance of which New Mexico, and Santa Fe, especially, is the seat and center.

Espejo, who is regarded as the more reliable of the early explorers, frequently makes reference to the presence of precious metals. Thus upon or near the lower Rio Grande he speaks of "many mines of silver, which, according to the judgment of skillful men, were very plentiful and rich in metal," and, in another paragraph, of "abundance of rich metals." At Paola (Bernalillo Co.), of finding in their towns and houses "many sorts of metals, whereof some seemed to be very good." At Zia, he says "they shewed them rich metals, and the mountains also not farre off where they digged them." Of a mine he visited near Zuñi, Espejo says he "tooke out of the same with his own hands exceeding rich metals holding great quantitie of silver." Returning from Zuñi he "found twelve leagues east of Quires (Santo Domingo pueblo near Wallace station, A., T. & S. F. R. R.), a province of Indians called Hubates (old pueblos, Santa Fe county), near mountains full of pine and cedar, who received them peaceably, and gave them great store of victuals, informing them also of very rich mines which they found, whereout they got glistening and good metal, and therewith returned to the town from whence they came."

That the mines of New Mexico were worked by the Spaniards to a considerable extent is amply attested in old, abandoned shafts to be found all along the mountains from the Santa Fe range to the Organs, and elsewhere. They were worked by the Pueblo Indians under duress, from which imposed labors the latter revolted in 1680, drove their oppressors out of the country, and kept control of the same for a number of years. Terms of peace were finally made, and the Spaniards re-

ENSLAVED IN THE MINES.

turned under stipulations that, in their occupation of the country, the pursuits of the people were to be confined to agriculture and stock. As a consequence, for many years, mining was wholly abandoned, and but little attention has been given to mining in New Mexico until a comparatively recent date.

Since the American occupation, (1846,) as reported by the Director of the United States Mint, the net production in precious metals of the mines of New Mexico, down to and including 1881, have been in gold, $10,350,000, and of silver, $3,622,000, making a total of $13,972,000. The product of New Mexico in 1882, according to the report of the Director of the United States Geological Survey, "Mineral Resources and Products, 1883," was, of silver, $1,800,000; gold, $150,000.

The real general development of the mineral resources of the Territory only commenced less than six years ago. It was not until geological and mineralogical surveys (recommended in department letter of Governor Davis, in 1857,) had been made and reported by the General Government, and the coming of railroads and convenient transportation had become an assured fact, that development commenced in real earnest. Sufficient has thus been demonstrated to clearly establish beyond doubt that New Mexico is one of the richest and most permanent in mineral resources of all the States and Territories; that there are within its borders several mines entitled to rank among the most remarkable and richest in yield in the known world; and that there is still not only a broad and most inviting field for the investment of capital, but that the chances for the prospector are equal, or better, if possible, than any of the developed finds that have preceded. The writer does not hesitate to predict that New Mexico is upon the eve of one of most remarkable seasons of prosperity, as represented in its mineral resources, that has ever fallen to the lot of a mineral-bearing section; and presents the following facts as ear-marks of the truth of the statement asserted:

Generally, the resources of the Territory consist very largely of not only its mines of precious metals, but likewise of cinnabar, nickel, copper, lead, manganese (sulphate and carbonate), cobalt and iron; besides mica, salt, coal, gypsum, soda, arsenic, alum, borax, antimony, bitumen, tellurium, lime, kaoline, cement, sulphur, plumbago, mineral paints, silicates, chromium, vanadium, marble and fine building stone; precious stones and gems, such as topaz, rubies or garnets, amethyst, emerald, sapphire, olivine, crystals, peridot, chal-chi-we-te, chalcedony, obsidian, agates in variety, smoky quartz, prase, opal and silicified wood. Valuable mining properties are found in every county.

The following mining camps are mentioned, all in various stages of development: Moreno Placers, Elizabethtown, Poñil and Raton, in Colfax county; Ciengilla, Rio Cristobal, Rio Colorado, Arroyo Hondo and Picuris, in Taos county; Rio Arriba, Chama and Tierra Amarilla, in Rio Arriba county; Mineral Hill, in San Miguel county; Cerrillos, Bonanza, Santa Fe Cañon, San Pedro, Golden, Lone Pine, Gonzales, Nambe, Pecos River and Old and New Placers, in Santa Fe county; Tijeras, Hell Cañon and Nacimiento, in Bernalillo county. Camps in the Ladrones, Oscuro and Manzana ranges, in Valencia county; Magdalena, Socorro, Gallinas, Pueblo, Water Cañon, Clairmont and Cooneys, in Socorro county; Chloride, Grafton, Fairview, Robinson, Cuchillo Negro, Hillsboro, Lake Valley, Kingston, Upper and Lower Caballos and Percha, in Sierra county; Organs, Membrillo, San Andres, Jarilla and Tierra Blanca, in Dona Ana county; Jicarillas, Sierra Blanca, White Oaks and Nogal, in Lincoln county; Silver City, Georgetown, Santa Rita, Pinos Altos, Shakspeare, Gillespie, White Water, Central City, Cook's Range, Eureka, Victoria, Steeple Rock, Burro Mountains, Florida and Stonewall, in Grant county.

A few reduction works, smelters and stamp mills have been erected, and are in operation in nearly every county of the Territory. Notably among the latter, and as standing illustrations of highly profitable investment from the start, under intelligent construction and working and good business management, may be mentioned the Sierra Grande smelter at Lake Valley, and the Billing works at Socorro. The ores treated at these plants, respectively, are high and low grade, and are mined principally in the vicinity of the works. Other establishments of like character are being erected.

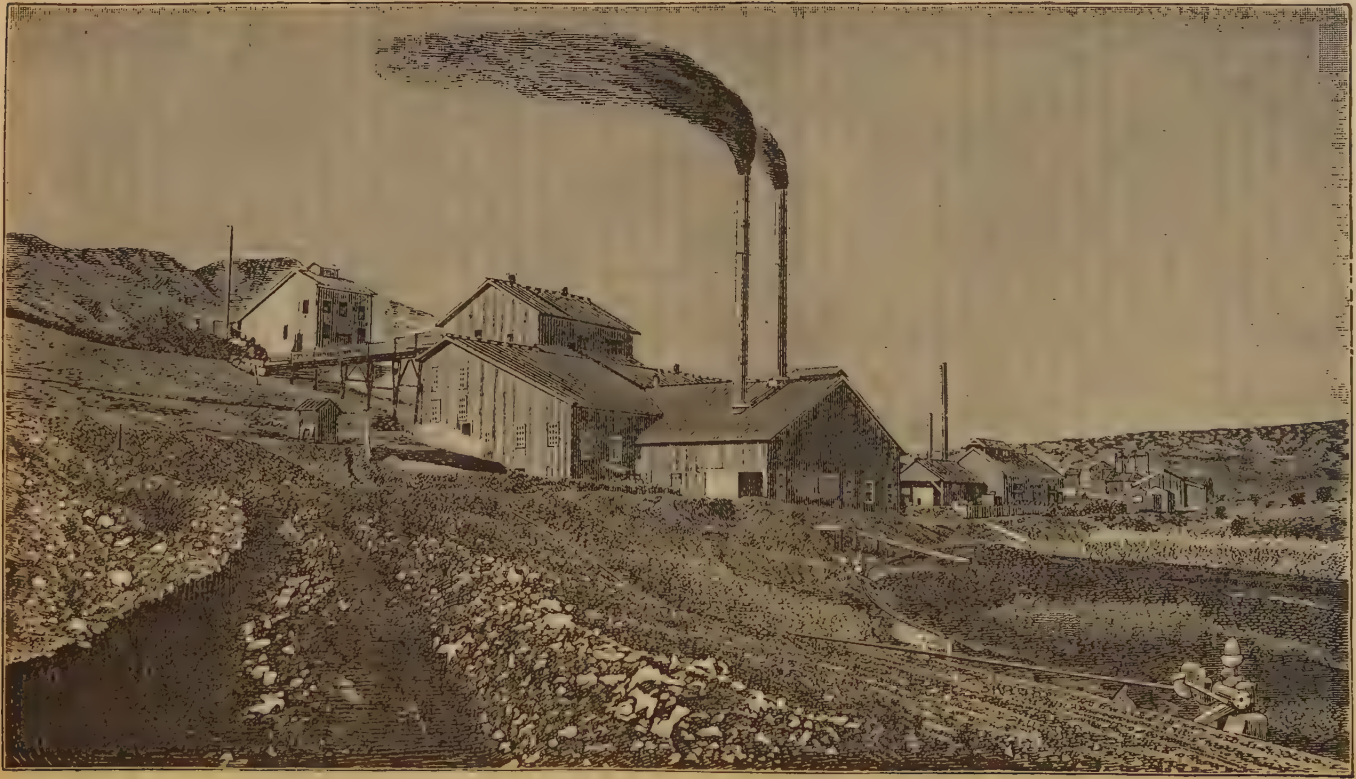
One superior advantage is the equable climate of New Mexico, which admits of the working of all its mines the year round. Mining developments are growing with increasing activity. We repeat, that the vast and varied mineral wealth of New Mexico has been so far established before the mining world during the past few years as to leave no shadow of doubt of its presence and permanency. Where there are so many valuable properties well worthy of special mention, it becomes exceedingly difficult, in a brief paper, to enter upon the task without danger of exciting a feeling of unjust discrimination. (An alphabetical list of mining camps in New Mexico, and how to reach them, is given in the first pages hereof.)

## A WONDERFUL MINE.

There is, however, one young giant among the mining camps, which has so wonderfully and but recently come into existence, and the facts with reference to which uniformly, from its first opening, read so much like a chapter from the Arabian Night's Entertainment, that we here transfer an extract from a paper prepared by an able pen, following its early development, and in which statement the writer hereof, who personally visited and examined the camp in question at the time, is prepared to verify:

> There are at Daly (now Lake Valley), not less than 7,000 tons of ore on the dumps, running from $100 to $20,000 to the ton; and in the mines, already uncovered and exposed to view, there are certainly not less than 20,000 tons more of the same kind and richer ore. We believe we saw, in the two hours it took us to view the mines, not less than $15,000,000 worth of ore. That running from $200 to $300 to the ton is classed as low grade in this camp. The pay begins at the grass roots, and even in places at the croppings above the ground, and continues to a depth already reached of fifty feet, and along the hillside for a distance of probably 2,000 feet. The deepest shaft we descended was not over fifty feet, and the ore body was still pitching downward. Huge caverns have been excavated beneath the grass, with only a thin roof of limestone or porphyry from one to six or eight feet thick, supported on timbers, which gives the place a wild, weird appearance, with its huge mountains of silver ore rolled one upon another by nature in her throes with some primeval volcano, and prepares one for the appearance, in some dark corner, of the genius who presides over nature's treasures. Instinctively one raises his candle to get a better view of the magic chambers. Here the rock is black, and looks like iron slag from some huge forge; there it has a reddish cast, as though the internal fires to which it owes its origin, had not cooled off; yonder the ore loses its characteristics as a rock formation and resembles a huge mass of quicksilver amalgam, both to the touch and to the eye; in another spot it hangs in beautiful, glistening, soft chloride crystals which feel damp in the hand, and when compressed yield to the pressure and assume the shape of the closed palm, like dough. The latter formation, is more readily smelted than any ore we ever saw before, the flame of the candle sending the virgin silver dripping down the wall like shot. We had heard and doubted this story, and were perfectly well aware of the fact that, according to the chemistry, it requires 1,873 degrees Fahrenheit to fuse silver; yet we are now living witnesses to the fact that the flame of the candle held against the projecting crystals of chloride of silver in these mines, unaided by the blow-pipe, is sufficient to fuse them in half a minute. These chlorides run about $27,000 to the ton; and we certainly saw of them and horn silver (equally as rich) a hundred tons. The chamber containing these crystals is called the bridal chamber; and it is here that Governor Safford, of Arizona, offered to give $50,000 to be allowed to carry off and keep all the ore that he might, by his own individual labor, extract in ten hours. There is scarcely any waste rock. There are five piles of ore to one of waste; and it is with difficulty that rock is obtained for building the dumps to the height of a wagon without using ore for the purpose.—*S. H. Newman, in El Paso Lone Star.*

Two hundred thousand dollars have been expended in the erection of stamp mills and reduction works, $60,000 of the amount in the erection of pumping works, to elevate the water two hundred feet, and to conduct the same two miles through iron pipes to the camp. The works are a splendid success. The $7,000 chunk of the Lake Valley ore, contained in a glass case no more than three feet square each way, is well remembered as the mineral wonder of the general exposition of the mineral products of the Rocky Mountain States and Territories, held at the city of Denver in the summer and fall of 1883.



REDUCTION WORKS—LAKE VALLEY.

The treasurer's report of the Sierra Grande smelter shows the amount of money received for the output of the company's mines in the immediate vicinity, for the first six months' working of the plant, to have been $735,260.12. A more recent official statement of the extraordinary profits of the Sierra's properties and company is given at length elsewhere.

## ANOTHER ILLUSTRATION.

Northwesterly from Lake Valley, about 25 miles, in the new county of Sierra, is another specially rich mineral district known as the "Percha Country," situate upon the head waters of the river of same name, and which river is here divided into three branches. The altitude of this section, about 7,400 feet, and latitude, makes its climate equable the year around. And its mountain streams furnish an abundance of pure water.

The district, as developed at this writing, extends north and south for a distance of about ten miles in the foot-hills along the eastern base or slope of the Southern Black Range. Its southern extremity is the group of mines upon the South Percha, from whence the district extends north, crossing the middle stream and group of mines at Kingston to the north group of mines, centering about the "Solitaire" claim upon the north Percha.

The first discovery in the district was made in the summer of 1881, and has since proved to be a very rich property. The claim is known as the "Bullion," the first assay of which averaged $250 in silver to the ton. As reported by responsible experts, a year later, a shaft had been sunk 70 feet, out of which $30,000 had been taken. Another body of ore, since taken from the same mine, yielded an average of $1,200 to the ton.

The new town of Kingston, located near this claim, has sprung into existence within the past few months. Its size and importance will be somewhat apparent from the fact that it already numbers among its business establishments a healthy looking and ably conducted folio newspaper and a bank. Quoting from the report last referred to—"the ore in the Bullion occurs in continuous pockets in the lime, and near to a dyke of porphyry; the gangue of the pocket is quartzose—calcareous and argallaceous—carrying iron and copper pyrites and silver antomonide. The outcrop shows rusty and black." Large quantities of the Bullion ore are annually shipped to the Argo works at Denver for reduction.

Other mines near the Bullion are the Superior, the Comstock, John S. Phelps, Caledonia, Polar Star, Miner's Dream, Silver Queen, Illinois and Iron King, and a large number of other claims of greater or less merit, many of which are commanding the attention of capitalists. The last named, when only an eight-foot prospect hole, sold to New York parties for $45,000. Subsequent developments have fully verified the wisdom of the venture. At 500 feet development the yield is from 20 to 90 ounces of silver, and a large percentage of lead. The first named claim adjoins the Bullion, and has been already largely developed with the most satisfactory results by a California company, having for its president Governor Perkins. Machinery has been purchased by the company, and will soon be in place for the thorough working of the Superior. At the depth of 166 feet a well defined contact vein of five feet was struck in the Superior, out of which $5,000 was taken in less than twenty-four hours. The output of the Kingston mines, for 1883, is stated by writers of repute to be $210,000.

The Grey Eagle, for which there is a standing offer of $85,000 whenever a clear title can be given, and the Ontario, averaging 93 ounces, are representatives of a large number of claims partially developed, and situate upon and near the South Percha. Among other mines of merit may be named the Morning Star, Nevada, Hillsboro, Chapeau and Gem.

The developments upon the North Percha have been very remarkable, some of the finds giving promise of ranking with the best. The most prominent of the latter is the Solitaire, showing 60 per cent. silver in the outcroppings. One specimen of float of solid silver weighing over 100 pounds was found. The ledge has been discovered and rich developments have been made. The prospectors and claimants of this mine realized for the property $10,000. The Sinclare is an extension of the latter. The Brilliant is also of the same group. Jefferson Raynolds, the banker, is part owner, and vouches for assays of the same made at Denver, running per ton, respectively, $1,700, $800, $400, and the lowest $153. A selected piece run $6,000. Of the district generally, experience in development agrees that the mineral occurs in contacts between lime and porphyry, similar to Leadville, with the exception in favor of Percha, that the contact is easily discovered, while in the Leadville region the prospector has often to sink blind through 100 feet or more of wash or even a cap of porphyry.

The mines above mentioned are simply the representatives of scores of other mines of equal merit in this superb mining center.

# PROFITS OF MINING AND SMELTING IN NEW MEXICO ILLUSTRATED.

## HIGH GRADE ORES AS A BASIS OF BUSINESS.

[From the published statement of the Sierra Grande Mining Company.]

The following financial statement shows the receipts and expenditures of the Treasurer, from the incorporation of the company, July 30, 1881, to the present date, March 16, 1883:

### RECEIPTS.

| | | | | |
|---|---|---|---|---|
| From Working Capital, subscribed to begin development | | | $10,000 00 | |
| Sale of product of The Sierra Grande Mines—Silver bars | | $1,048,436 59 | | |
| Sale of ores | | 37,266 52 | | |
| | | | 1,085,703 11 | |
| | | | | $1,095,703 11 |

### PAYMENTS.

| | | | | |
|---|---|---|---|---|
| For Real Estate.—Purchase of additional mining property | | | $31,000 00 | |
| For Construction.—Cost of mill machinery and appurtenances | $47,388 52 | | | |
| Labor in construction, freight on materials, &c. | 51,859 57 | | | |
| | | $99,248 09 | | |
| Cost of water works plant | $36,070 51 | | | |
| Labor in construction, freight on materials, &c. | 20,851 15 | | | |
| | | 56,921 66 | | |
| Cost of smelter and Cupel furnaces | $7,415 50 | | | |
| Labor in construction, freight on materials, &c. | 9,933 67 | | | |
| | | 17,349 17 | | |
| | | | 173,518 92 | |
| For Working Expenses and Management.—Silver mill—supplies (including quicksilver, chemicals and fuel) and repairs | $108,231 41 | | | |
| Silver mill—labor | 28,530 77 | | | |
| | | $136,662 18 | | |
| Water works—supplies and labor | | 2,545 67 | | |
| Smelter—supplies and labor | | 375 60 | | |
| Mine development—supplies (including cost of hoisting works) | $26,174 16 | | | |
| Mine development—labor | 91,470 07 | | | |
| | | 117,644 23 | | |
| Freight on supplies | | 7,206 88 | | |
| Expressage on bullion and freight on ores | | 14,013 65 | | |
| Salaries, telegraphing, advertising, office and traveling expenses at Lake Valley and Philadelphia | | 36,573 99 | | |
| Experts' examination of Sierra Grande property | | 2,200 00 | | |
| Insurance | | 1,500 00 | | |
| Interest account (on capital borrowed for construction and development, and repaid in full) | | 6,584 46 | | |
| | | | 325,306 66 | |
| For Dividends—Pd. stockhold's, to date, | | | 500,000 00 | |
| | | | | 1,029,825 58 |
| Balance | | | | $65,877 53 |
| Bullion on hand—unsold | | | | 75,000 00 |
| Total cash assets, March 16th, 1883 | | | | $140,877 53 |

March 16th, 1883. J. A. KAISER, *Treasurer*.

From the above official statement it will be noticed that the **Total Amount Paid in** of the working capital of "The Sierra Grande Mining Company" was only ............................ $10,000 00

| | |
|---|---|
| That from the proceeds of the business of the company from July 20, 1881, to March 16, 1883, there had been paid to stockholders in dividends | 500,000 00 |
| That at the latter date there remained in hand of cash assets | 140,877 53 |

Thus paying dividends upon a business running for one year and eight months upon the actual cash capital invested, incredible as it may appear, a percentage of fifty-hundred per cent., or an annual return of thirty fold; and still leaving cash assets fourteen-fold greater than the original cash capital paid in.

## LOW GRADE ORES AS A BASIS OF BUSINESS.

The following statement of cost and output in the smelting of ores, based upon actual experience in New Mexico, and vouched for by responsible parties, is presented for the consideration of those seeking information in this direction. (The proprietors prefer not to be named.)

The mines referred to, and immediately operated, possess smelting ores in large bodies; the ore is low grade in silver, high in lead, free smelting, and carries both iron and lead in sufficient quantities to not only flux themselves, but also to aid materially in the reduction of ores of a refractory nature.

The smelter company paid for their mine the sum of $40,000. A few months since it was estimated that 200,000 tons of ore was in sight in this mine. For six months previous to this estimate the yield of the mine had kept in constant blast a smelter of eighty-ton daily capacity. The ore averages about seven ounces of silver and forty per cent. lead per ton, and is transported from the mine to the smelter by railway (thirty miles), at an expense of $4.50 per ton.

With these prefatory facts, the following comprehensive statement of daily cost of production and profit is given:

### COST OF PRODUCTION.

| | | |
|---|---|---|
| Mining per ton | $1 50 | |
| Transportation per ton | 4 50 | |
| Smelting per ton | 6 50 | |
| Total cost per ton, (crude ore) | $12 50 | |
| Three tons of crude ore to the ton of bullion, (multiply) | 3 | |
| Total cost per ton, bullion | $37 50 | |
| Transportation of bullion to market, per ton | 12 50 | |
| Refining same | 7 00 | |
| Cost of refining ton of bullion | | $57 00 |

### OUTPUT VALUE.

| | | |
|---|---|---|
| From 3 tons of ore, 21 oz. silver, at $1.10 | $23 10 | |
| From 3 tons of ore, 2,000 lbs. lead, at 4c | 80 00 | |
| Total value of ton bullion | | $103 10 |
| Net profit per ton bullion | | $46 10 |
| Average number of tons of bullion produced per day, 26, (multiply) | | 26 |
| Net daily profit of the smelter | | $1,198 60 |

Capital invested in mine and smelter, $150,000.

Counting that the smelter is in operation *no more* than 300 days in the year, and the net profit would be $359,580 per annum, or over 233 per cent. upon the investment.

So much for intelligent construction and good business management at the back of smelting works on low grade ores in New Mexico.

Low grade ores of the type above described are to be found in many portions of the Territory, notably in the counties of Santa Fe, Socorro and Grant, and the mines can be purchased on favorable terms.

## POMOLOGY—AGRICULTURE—HORTICULTURE.

Agriculture is chiefly confined to the valleys, where irrigation can be made available. Some of the mountain parks produce the more hardy and root crops without irrigation.

There is more than sufficient agricultural land, which, if cultivated, would supply a home market equal in value to the highest industrial development of the Territory.

In horticulture sufficient has been demonstrated by amateurs to show the presence in various sections of the Territory of fruit trees in variety, of twenty years' growth and less, that are thrifty, free from insects and parasites, and symmetrical in form, while their deep green foliage and prolific bearing give assurance of perfect health, and their superb flavor the highest adaptation of soil and temperature.

The range of fruits represented includes those of Iowa, Illinois and Ohio, while the southern portion of the Territory also includes some of the semi-tropical fruits, including almonds, figs and prunes.

Experts in California fruits concede New Mexico to possess all the advantages of the latter in every essential of horticultural success. Especially is this a fact in the cultivation of the grape, and in fruits indigenous to the Northern States. New Mexico possesses all the advantages of the moderate temperature of the States named, with none of the disadvantages of the rigorous, cold climate incident to the latter.

Under proper attention in cultivation, as reported at the Bureau of Immigration, Santa Fe, the yield per acre of wheat is from 15 to 50 bushels; corn 40 to 60 bushels; oats, from 35 to 45 bushels; and that of vegetables is simply enormous. A twelve-acre field of corn, grown in the Placer Mountains without irrigation, the past season, samples of which are on exhibition at the bureau, compare favorably as to quality with Eastern cultivation.

The quality of the wheat grown in New Mexico, in common with the New West, is acknowledged to be the best raised in the United States. Being produced in a dry climate by irrigation, the grain comes to a full, perfect head, is very heavy, and makes a flour which is already exported by rail to distant points in the East.

### ARABLE AREA.

The amount of land susceptible of profitable cultivation is approximated, and something about irrigation and methods are given in the following extracts from a paper issued by the Bureau, and heretofore published in another form:

The United States census for 1880 will speak for itself. With a population of less than 120,000, New Mexico numbers 5,053 farms, covering a total area, in round numbers, of 450,000 acres, 25 per cent. of which land is under immediate cultivation. While it is true there is less arable land in the Territory relative to its entire area, as compared with the relative area of either of the Central States, or States located upon the slopes of the Mississippi valley, there is no doubt but what the breadth of arable lands in New Mexico is nearly or quite equal to the average arable area of the Eastern and Middle States, excepting the States of New York and Pennsylvania, and even more valuable to the farmer and fruit grower, because of the superior market of a new emigration, new people and new necessities.

### IRRIGATION.

This statement of facts will not be doubted when the extent of the water system of the Territory is considered, and which has already been given in detail. The valleys bordering on these several water courses, where irrigation is unnecessary, it must be understood, are distributed over an area of Territory covering, as New Mexico does, an aggregate of square miles equal to the whole area of the six New England States, the great State of New York, and the State of New Jersey thrown in. Excepting in several of the mountain parks, irrigation is more or less, a necessity. Nor must agriculture in consequence be regarded as less practical or profitable as a business.

Irrigation has been properly termed scientific farming. The tiller of the soil is not left at the mercy of fortuitous rains. His capital and labor are not risked upon an adventure. He can plan with all the certainty of a mechanic. He is the chemist whose laboratory is a certain area of land; everything but the water is at hand—the bright sun, the potash, and other valuable mineral ingredients (not washed out of the soil by centuries of rain); his climate secures him always from an excess of moisture, and what nature fails to yield—greater or less, according to the season—the farmer supplies from his irrigating canal.

The soil is uniformly good for cultivation, and, under ditch, water is thus brought equably and with certainty according to the necessities of vegetation, and the effects of drouths avoided. Another and important advantage in cultivation by irrigation is the fertilizers, in the form of mountain wash, brought without extra labor or expense, in suspension or solution, and deposited, whereby the natural exhaustion coming from cultivation is annually repaired, and the producing qualities of the soil kept good.

### HORACE GREELEY ON IRRIGATION.

A quotation from a recognized agricultural authority of the highest character—the late Horace Greeley—will be interesting in this connection.

> "To many the cost of irrigation would seem so much added to the expense of cultivation without irrigation; but this is a mistake. Here is land free from stump or stick or stone, which may easily and surely be plowed and seeded in March or April, and which will produce great crops of nearly every grain, grass or vegetable, and with a moderate outlay of labor to subdue or till it. The farmer need not lose three days per annum by rains in the growing season, and need not fear storms or showers when he seeks to harvest his grass or grain. Nothing like ague or any malarious disease exhausts his vitality or paralyzes his strength. I saw men breaking up for the first time tracts which had received no water, with but a single span of horses as team, whereas in the prairie States breaking up involved a much larger outlay of power."

### A GOOD HOME MARKET.

Agriculture is now and will probably remain secondary to other and permanent interests, for illustration, mining. Secondary, I mean, in the sense that the value of agriculture and market gardening is dependent largely upon a home market, which is assured in the growing importance, permanence and diffused presence of mining industry. This home market, it must also be remembered, receives the natural protection from eastern competition by an overland transportation of hundred of miles intervening. To the demands of the mining camps for the products of the farm and garden, may be added similar demands from innumerable cattle and sheep ranches, and from general manufacturing. The latter, although now in its formative period, is necessarily destined to grow with accelerated progression until the Territory, with its immense and varied resources, fulfills its destiny as a great center of industrial production.

The range of products to which the arable lands of New Mexico are adapted is varied, as before stated, ranging from the more hardy varieties bordering on the great lakes of the north to the semi-tropical fruits and vegetables of the gulf. In vegetables and fruits, especially, there are some instances where the perfection in flavor, yield and size are astonishing.

But a small proportion of the arable land of the Territory has thus far been brought under cultivation, the latter covering only a few hundred thousand acres, and the system of irrigation crude and improvident.

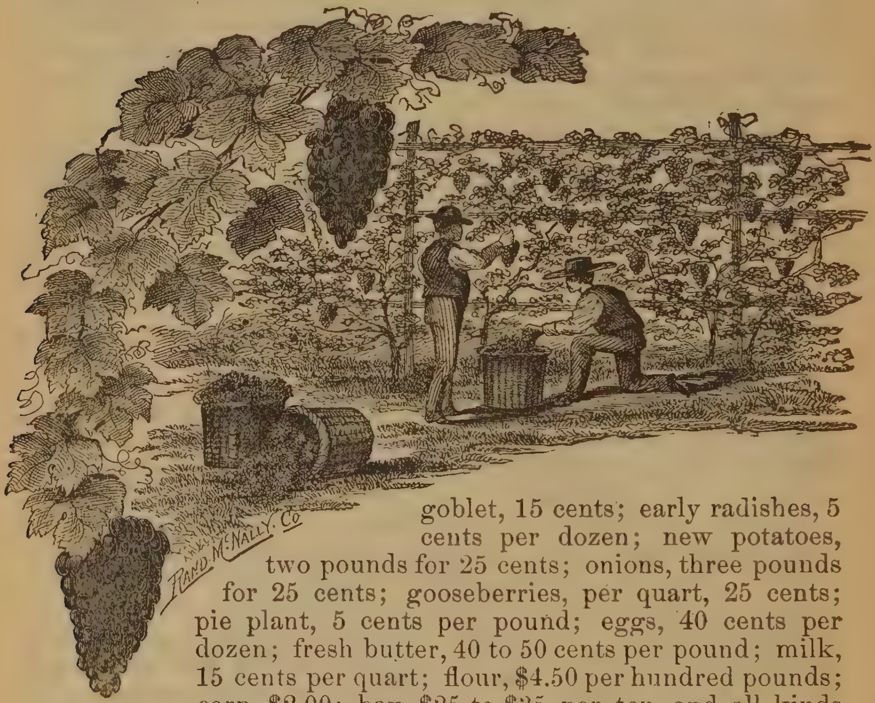
Few, or none, of the economical methods known to modern systems have been introduced. Water conduits of iron, whereby soakage, evaporation and the general wastage incident to the present system are avoided, have not obtained. Saving of the water wastage and the surplus of the rainy season, through systems of dams and store reservoirs, has no place as yet in New Mexico. Deep fall plowing should and will wholly supplant the surface scratching of the Mexican crooked stick, yclept plow, whereby the crust of the adobe soil would be broken up and the melting snows of winter given an opportunity to find their way into the tillable ground. This, added to the natural advantages afforded by a mild climate for early planting, renders it practicable in many places to bring broad areas under cultivation, which otherwise would be too uncertain to warrant the attempt.

With modern methods in irrigation applied to the natural water supply, and an equitable distribution of the water, there is no reasonable doubt of the Territory of New Mexico, in its products of the soil, comparing favorably with the average State, as before stated, along the Atlantic slope.

In horticulture and viniculture, both tree and vine are of healthy growth, the fruit is of superior flavor and perfection, and compares favorably with the best. Grapes from New Mexico are already in demand, and are shipped to eastern markets and sold at high prices. When horticulture shall have arrived at the same degree of development as that of the vine, the fruit will likewise be in ready demand abroad as well at home.

## MARKET GARDENING.

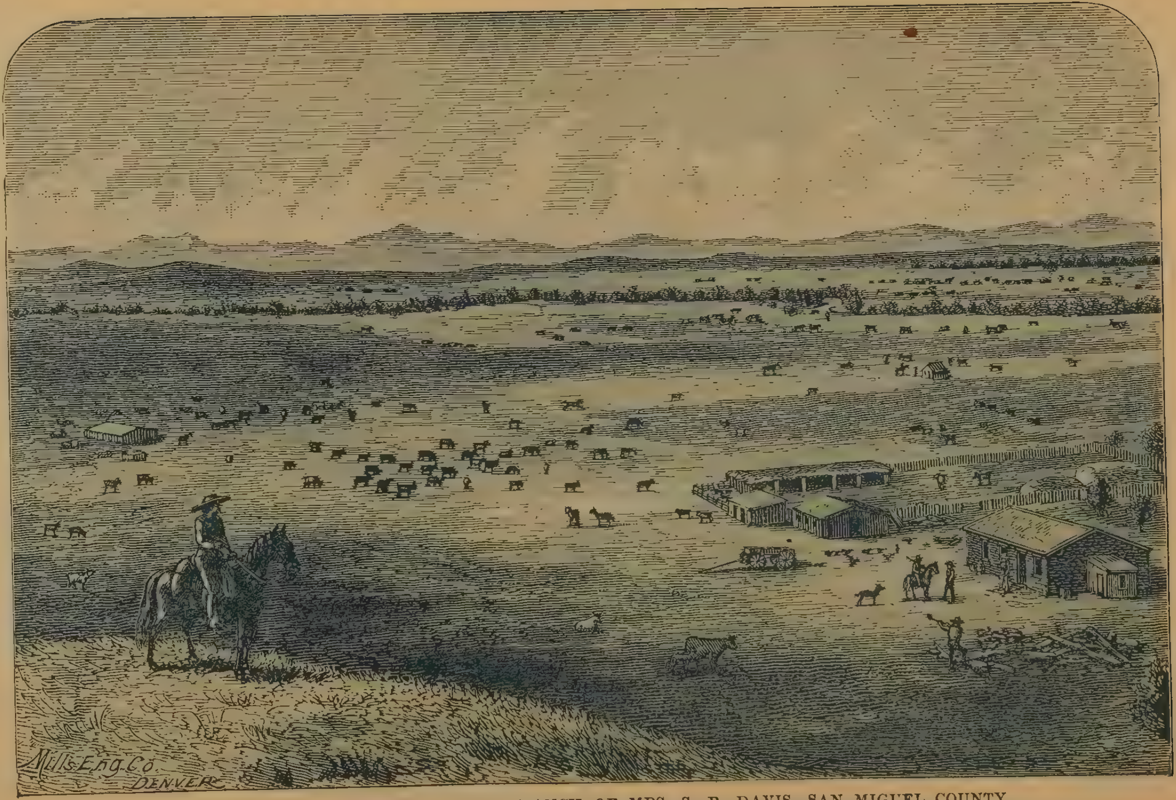
Opportunities for market gardening are good in every portion of the Territory, and all kinds of produce commands unusually high prices. Prices at Santa Fe, where there are a number of market gardens, will average: Bunch of asparagus the size of a goblet, 15 cents; early radishes, 5 cents per dozen; new potatoes, two pounds for 25 cents; onions, three pounds for 25 cents; gooseberries, per quart, 25 cents; pie plant, 5 cents per pound; eggs, 40 cents per dozen; fresh butter, 40 to 50 cents per pound; milk, 15 cents per quart; flour, $4.50 per hundred pounds; corn, $2.00; hay, $25 to $35 per ton, and all kinds of fruit in season in proportion.


RAND, McNALLY & Co.

## VEGETABLE YIELD.

Commissioner Whigham, in a report to the Bureau of Immigration upon Colfax county, states as follows:

"In the production of many vegetables, this county excels, especially in onions, beets and cabbage. Onions were grown here which were seven inches in diameter, and weighed four pounds each, and the delicacy of their flavor gives them peculiar excellence. Irish potatoes grow remarkably well throughout the mountains, 400 bushels to the acre having been frequently raised, and 200 bushels is an average crop; these potatoes are very fine, and the amount of potato land is practically unlimited. Cabbages have been grown at Cimarron which weighed from thirty



A STOCK RANGE IN NEW MEXICO—RANCH OF MRS. S. B. DAVIS, SAN MIGUEL COUNTY.

to thirty-seven pounds. A pumpkin grown on the Vermejo weighed eighty pounds."

The above may be taken as applicable to the whole Territory, except as to potatoes, the product of which is generally confined to mountain parks.

### FRUITS AND SHADE TREES.

Commissioner Hazledine, in a like report for Bernalillo county, says:

"Until within a few years but slight attention has been paid in this part of the valley to the culture of fine fruit trees. Small July and October apples, red (wild) plums, fair pears, good peaches, excellent apricots and enormous quinces have been raised successfully by the descendants of the Spaniards from time immemorial; also by the Indians of several of the pueblos. Experience has proven that the finest apples and pears can be raised in this locality by grafting into the native stock. Set out the stock where it is to remain, and the second year cut off near the ground and graft into it with scions from fruit-bearing trees of the varieties desired.

"In this way fruit-bearing trees can be secured much sooner than by planting the standard or dwarf tree from the eastern nurseries. Trees grafted as stated need tying to stakes for the first two years, to protect them from the high winds prevailing in the spring months; and all fruit trees on account of these winds should be pruned down and the branches kept as near the ground as possible. I have known trees grafted near the ground in April to grow seven feet in height by the fall of the leaf the same year, and stem just above the graft bulb to increase from the ordinary size of an apple scion to 1½ inches in diameter. All fruit trees are healthy in this valley if properly cared for, and yield enormously. The apricot and peach blossoming so early in the season, are uncertain crops, but the other tree fruits of the temperate zone are almost sure. In the lower valley the fig and almond do well, and as far north as Valencia I have known fair crops to be raised.

### NURSERIES.

"Nurseries are needed in this portion of the valley, and no legitimate business would yield better financial results. In them should be raised for sale, not only fruit trees of all kinds, and shrubs, but also a good assortment of evergreen and deciduous trees for shade purposes. Though but few countries need shade trees more than New Mexico, scarcely any have less. Its chief reliance is the cottonwood, which, though a rapid grower, is not desirable near a residence at the season of the year when the inevitable caterpillar breeds in its branches. The ailanthus does well, and I should suppose the catalpa and silver-leaved maple would also.

### THE FRUIT-TREE BELT.

"In this belt may be included, not only the valleys of the Rio Grand and Pecos, but also the higher lands on either side, and an extensive range to the north of this county. I remember that when the peach crop failed in the Rio Grande valley, (in 1869, I think,) the only peaches we got that year were from the Indian pueblo of Jemes, which has an altitude several hundred feet greater than Albuquerque, and is about forty miles farther north. Most excellent apples are raised at Santa Fe, and could be, I have no doubt, in many of the valleys in the mountains to the east, west and north of us.

## LIVE STOCK.

### CATTLE.

The mesas and mountain parks supply food for stock. The grasses grow plentifully on the mesas, in the valleys and on the mountains, except in very dry seasons upon the mesas. The grasses, cured upon the ground in the fall in the dry atmosphere, retain their nutritious qualities and constitute the winter feed.

The mildness of the winter admits of stock feeding on the ranges the year round.

The practicability of sinking wells in many places now destitute of water is well known, and admits of bringing many square miles into use that are now outside of the immediate presence of water. Other square miles, now monopolized by those essaying to be the sole owners of water, may in like manner be taken possession of by stockmen who will be to the expense of sinking for water. Windmills for raising water are also valuable and available. As every large mesa is more or less covered by deep arroyas or cañons, in the bottom of which water can be obtained a few feet from the surface, the whole area of the table lands can be made available for stock raising.

The Staked Plains, even, can be added to the grazing area by sinking wells and the use of windmills, as indicated.

In order that those interested my know something with respect to the profits of breeding and growing cattle for market in New Mexico, the following statement is presented for consideration. It was furnished upon application by Mr. G. L. Brooks, secretary of the Central New Mexico Cattle Growers' Association, a gentleman in position to speak informedly upon the subject. It will be noticed that the estimates are with reference to the mere investment in cattle; are made without reference to the cost of ranch and range. The large increase in value of this class of property upon development and stocking is reliable, certainly so at the present time, and therefore not necessary to be included in the estimates.

### BUSINESS OF CATTLE RAISING—ALL FEMALE HERD—MIXED HERD.

"I have seen various estimates of the profits to be realized from the business of cattle raising for some given term of years, but nothing attempting to set forth the *difference* in profits between starting with an all female herd or with a mixed lot of cattle.

"The following estimates are made upon cattle delivered upon the range in New Mexico, and while approximate, of course, are believed to be within bounds, and are made taking ordinary seasons as a basis, and from the actual experience of old ranchmen who have been years in the business; and also that investors may form a reasonably correct idea of cattle raising for profit.

"Both estimates show the earnings for six years, and are based upon an increase from the cows and two-year-old heifers of 80 per cent. per annum, and an annual loss upon all classes of 3 per cent.

"In the one case, (estimate A,) calculation is based on an original stock of heifers; and in the other, (estimate B,) of all classes of cattle.

"The estimates are made from the present prices of good cattle delivered upon ranges in southern and central New Mexico, and these prices govern throughout the term of six years, as, while prices may vary in different years, it is assumed as reasonably certain that they will average with present values, and in all probability average for the full term from 10 to 20 per cent. higher.

"These estimates have been submitted to several of the oldest cattle raisers in the Territory, and pronounced by them to be conservative in every respect; that the percentage of loss, number of bulls and cow ponies required, yearly expenses, as well as the cost of bulls and cow ponies, have *all* been *overestimated*, and the percentage of increase of cattle *underestimated*, as compared with their experience.

"As will be seen, a ranch stocked as per estimate A would return a much larger interest rate upon the money invested than one stocked as per estimate B, but would require a reserve fund from which to pay running expenses for the first three years, while a ranch stocked as per estimate B would pay all expenses and annual dividends from the beginning; but as estimate A

## ESTIMATE A, STARTING WITH HEIFERS.

| | April 1, 1884, to March 31, 1885. | | April 1, 1885, to March 31, 1886. | | April 1, 1886, to March 31, 1887. | | April 1, 1887, to March 31, 1888. | | April 1, 1888, to March 31, 1889. | | April 1, 1889, to March 31, 1890. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Number of Head....* | *Value......* | *Number of Head....* | *Value......* | *Number of Head. ...* | *Value......* | *Number of Head. ...* | *Value......* | *Number of Head....* | *Value......* | *Number of Head....* | *Value......* |
| Cows | 3,000 | $67,500 00 | 2,910 | $80,025 00 | 5,646 | $155,265 00 | 6,572 | $180,730 00 | 8,499 | $233,722 50 | 10,717 | $294,717 50 |
| Heifers, 2 years | 3,000 | 57,000 00 | 2,910 | 65,475 00 | 1,129 | 25,402 50 | 2,190 | 49,275 00 | 2,549 | 58,352 50 | 3,297 | 74,182 50 |
| Heifers, 1 year | | | 1,164 | 22,116 00 | 2,258 | 42,902 00 | 2,628 | 49,932 00 | 2,399 | 64,581 00 | 4,287 | 81,453 00 |
| Steers, 1 year | | | 1,164 | 20,370 00 | 2,258 | 39,515 00 | 2,628 | 45,990 00 | 2,399 | 59,482 50 | 4,287 | 75,022 50 |
| Steers, 2 years | | | | | 1,129 | 22,580 00 | 2,190 | 43,800 00 | 2,549 | 50,980 00 | 3,297 | 65,940 00 |
| Steers, 3 years | | | | | | | 1,095 | 27,375 00 | 2,144 | 53,100 00 | 2,473 | 61,825 00 |
| | 6,000 | $121,500 00 | 8,148 | $187,986 00 | 12,420 | $285,664 50 | 17,303 | $397,102 00 | 22,519 | $519,218 50 | 28,358 | $653,140 50 |
| Bulls ($100 each) | 300 | 30,000 00 | 291 | 29,100 00 | 339 | 33,900 00 | 437 | 43,700 00 | 553 | 55,300 00 | 700 | 70,000 00 |
| Cow ponies ($60 each) | 150 | 9,000 00 | 145 | 8,700 00 | 177 | 10,620 00 | 239 | 14,340 00 | 310 | 18,600 00 | 386 | 23,160 00 |
| | | $163,500 00 | | $225,786 00 | | $330,184 50 | | $455,152 00 | | $593,118 50 | | $746,300 50 |
| | *Cash Expenditures.* | | *Cash Expenditures.* | | *Cash Expenditures.* | | *Cash Expenditures.* | | *Cash Expenditures.* | | *Cash Expenditures.* | |
| Bulls ($100 each) | | | 58 bulls, | $5,800 00 | 112 bulls, | $11,200 00 | 133 bulls, | $13,000 00 | 169 bulls, | $16,900 00 | 215 bulls, | $21,500 00 |
| Cow ponies ($60 each) | | | 37 ponies, | 2,220 00 | 69 ponies, | 4,140 00 | 81 ponies, | 4,860 00 | 88 ponies, | 5,280 00 | 99 ponies, | 5,940 00 |
| Expenses, per head | Ex., $1.50, | $9,000 00 | Ex., $1.35, | 10,999 80 | Ex., $1.22, | 15,152 40 | Ex., $1.10, | 19,033 30 | Ex., 99c, | 22,293 81 | Ex., 90c, | 25,522 20 |
| | | | | $19,019 80 | | $30,492 40 | | $37,193 30 | | $14,473 81 | | $22,962 20 |
| | *Cash Receipts.* | | *Cash Receipts.* | | *Cash Receipts.* | | *Cash Receipts.* | | *Cash Receipts.* | | *Cash Receipts.* | |
| | | | | | | | 1,062 3-year-old steers, at $30, | $31,860 00 | 2,060 3-year-old steers, at $30, | $61,800 00 | 2,399 3-year-old steers, at $30, | $62,970 00 |
| Calves dropped | 1st year, 2,400 | | 2d year, 4,656 | | 3d year, 5,420 | | 4th year, 7,010 | | 5th y'r, 8,838 | | 6th y'r, 11,211 | |
| Herd increase | 1st year, 2,148 | | 2d year, 4,272 | | 3d year, 3,883 | | 4th year, 5,216 | | 5th y'r, 5,839 | | 6th y'r, 7,824 | |
| Net profit | 1st year, | $53,286 00 | 2d year, | $85,378 70 | 3d y'r, | $94,465 10 | 4th y'r, | $132,643 20 | 5th y'r, | $170,508 19 | 6th y'r, | $218,657 80 |
| Interest return | 1st y'r 30 4-5 per ct. | | 2d y'r, 44⅗ per ct. | | 3d y'r, 42½ per ct. | | 4th y'r, 58½ per ct. | | 5th y'r, 81 1-5 pr. ct. | | 6th y'r, 114½ per ct. | |

Annual average interest return, 62 per cent.

## ESTIMATE B, STARTING WITH STOCK CATTLE.

| | April 1, 1884, to March 31, 1885. | | April 1, 1885, to March 31, 1886. | | April 1, 1886, to March 31, 1887. | | April 1, 1887, to March 31, 1888. | | April 1, 1888, to March 31, 1889. | | April 1, 1889, to March 31, 1890. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Number of Head....* | *Value ......* | *Number of Head....* | *Value ......* | *Number of Head....* | *Value ......* | *Number of Head....* | *Value ......* | *Number of Head....* | *Value ......* | *Number of Head....* | *Value ......* |
| Cows ................................ | 1,000 | $27,500 00 | 1,940 | $53,350 00 | 2,823 | $77,632 50 | 3,469 | $95,397 50 | 4,428 | $121,770 00 | 5,602 | $154,055 00 |
| Heifers, 2 years .................... | 1,000 | 22,500 00 | 970 | 21,825 00 | 753 | 16,942 50 | 1,096 | 24,660 00 | 1,347 | 30,307 50 | 1,719 | 38,677 50 |
| Heifers, 1 year...................... | 1,000 | 19,000 00 | 776 | 14,744 00 | 1,130 | 21,470 00 | 1,388 | 26,372 00 | 1,772 | 33,668 00 | 2,241 | 42,579 00 |
| Steers, 3 years...................... | 1,000 | 25,000 00 | 970 | 24,250 00 | 941 | 23,525 00 | 731 | 18,275 00 | 1,064 | 26,600 00 | 1,307 | 32,675 00 |
| Steers, 2 years...................... | 1,000 | 20,000 00 | 970 | 19,400 00 | 753 | 15,060 00 | 1,096 | 21,920 00 | 1,349 | 26,940 00 | 1,719 | 34,380 00 |
| Steers, 1 year....................... | 1,000 | 17,500 00 | 776 | 13,580 00 | 1,130 | 19,775 00 | 1,388 | 24,290 00 | 1,772 | 31,010 00 | 2,241 | 39,217 50 |
| | 6,000 | $131,500 00 | 6,402 | $147,149 00 | 7,530 | $174,405 00 | 9,168 | $210,914 50 | 11,730 | $270,295 50 | 14,829 | $341,584 00 |
| Bulls ($100 each)....... ......... | 150 | 15,000 00 | 145 | 14,500 00 | 180 | 18,000 00 | 228 | 22,800 00 | 228 | 28,800 00 | 366 | 36,600 00 |
| Cow ponies ($60 each).......... | 150 | 9,000 00 | 145 | 8,700 00 | 151 | 9,060 00 | 167 | 10,020 00 | 191 | 11,460 00 | 230 | 13,800 00 |
| | | $155,500 00 | | $170,349 00 | | $201,465 00 | | $243,734 50 | | $312,525 50 | | ................ |

| | *Cash Expenditures.* | *Cash Expenditures.* | *Cash Expenditures.* | *Cash Expenditures.* | *Cash Expenditures.* | *Cash Expenditures.* |
|---|---|---|---|---|---|---|
| Bulls ($100 each)................ | .................................... | 40 bulls, $4,000 00 | 55 bulls, $5,500 00 | 69 bulls, $6,900 00 | 89 bulls, $8,900 00 | 112 bulls, $11,200 00 |
| Cow ponies ($60 each)......... | .................................... | 10 ponies, 600 00 | 21 ponies, 1,260 00 | 30 ponies, 1,800 00 | 46 ponies, 2,760 00 | 52 ponies, 3,120 00 |
| Expenses, per head.............. | Ex., $1.50, $9,000 00 | Ex., $1.35, 8,642 70 | Ex., $1.22, 9,186 60 | Ex., $1.10, 10,084 80 | Ex., 99c, 11,612 70 | Expenses, 13,346 10 |
| | | $13,342 70 | $15,946 60 | $18,784 80 | $23,272 70 | $27,666 10 |

| | *Cash Receipts.* | *Cash Receipts.* | *Cash Receipts.* | *Cash Receipts.* | *Cash Receipts.* | *Cash Receipts.* |
|---|---|---|---|---|---|---|
| | 970 3-year-old steers at $30, $29,100 00 | 941 3-year-old steers at $30, $28,230 00 | 913 3-year-old steers at $30, $27,390 00 | 710 3-year-old steers at $30, $21,300 00 | 1,032 3-year-old steers at $30, $30,960 00 | 1,268 3-year-old steers at $30, $38,040 00 |
| Calves dropped..................... | 1st y'r, 1,600 | 2d y'r, 2,328 | 3d y'r, 2,860 | 4th y'r, 3,652 | 5th y'r, 4,620 | 6th y'r, 5,841 |
| Herd increase....................... | 1st y'r, 402 | 2d y'r, 1,128 | 3d y'r, 1,638 | 4th y'r, 2,562 | 5th y'r, 3,099 | 6th y'r, 3,968 |
| Net profit............................ | 1st y'r, $34,949 00 | 2d y'r, $46,103 30 | 3d y'r, $53,712 90 | 4th y'r, $71,307 20 | 5th y'r, $87,144 80 | 6th y'r, $114,262 40 |
| Interest return.................... | 1st y'r, 22½ per ct. | 2d y'r, 29⅔ per ct. | 3d y'r, 34½ per ct. | 4th y'r, 45¾ per ct. | 5th y'r, 56 per ct. | 6th y'r, 73½ per ct. |

Annual average interest return, 43 2-3 per cent.

shows nearly 50 per cent. larger profit, it is worthy of careful consideration—more careful consideration, we think, than has been usually accorded to the subject of what class of cattle it is best to stock up a new ranch with."

Commissioner Lea, of Lincoln county, writes: "The profits on stock raising are 50 per cent." These statements are substantially true in every part of the Territory.

### QUARANTINE AGAINST DISEASED CATTLE.

"Diseases among cattle in New Mexico which spring from local causes are almost unknown. The Texas fever has prevailed to some extent during the last and present seasons, arising from the importation of cattle afflicted with that disease. The Legislature, at the late session, enacted a stringent quarantine law, enforcible whenever the Governor may think the public interest demands it, and which has been demonstrated to be of great utility."

### SHEEP.

Mr. Whigham says with respect to sheep:

"While the cattle business is generally regarded as attended with less risk and more certain in its results, many claim for sheep raising a larger profit. Our observation—from fourteen years' residence in New Mexico and Colorado—is, that where it is desired to invest a large capital without giving a close personal attention to the business, cattle would be preferable, but where a man desires to invest a small or moderate capital in either business and give it his whole time, more money and quicker returns would be made by purchasing sheep. The annual wool clip is a timely, certain and good income to those who wish to invest the larger part of their capital at once."

The prices of sheep at this writing will not vary much from fifty per cent. less than the average prices for ten years preceding. As a consequence, if one is possessed of a range that can be controlled free from the encroachments of cattle, there is no doubt but what the present is most favorable for engaging in sheep raising.

"The prices of sheep and wool in 1882 were as follows:

| | |
|---|---|
| Common Mexican ewes, young | $1.50 |
| Common Mexican wethers | 1.25 |
| Graded Merino ewes, young | $2.00 to 3.00 |
| Graded wethers | 2.00 to 3.00 |

"It is difficult to give quotations of wool, as they are constantly varying; prices this year, however, have been from 15 cents per pound for the lowest grade of Mexican, to 24 cents for the choicest improved, unwashed. The wool clip varies from 2 to 6 pounds on flocks of ewes and wethers. The general average in this county on flocks would be 3½ pounds. The net increase of sheep is 80 per cent.

## HORSES.

Horses in New Mexico are strong and healthy. Though small in size, they are better adapted to the uneven surface of the country than large ones. The grasses are nutritous, and horses thrive on them as well or better than than they do upon the blue grass of Kentucky. They are numerous throughout all portions of the Territory, but there is no sufficient data from which to estimate their number; the proportion of horses to the number of people is much larger than in other countries. They can be cheaply raised, as they can subsist the entire year by grazing. The price of horses, broke to saddle or harness, varies from $35 for the ordinary stock pony to $75 for a good carriage horse.

## WOOL AND CATTLE PRODUCTS.

"In a careful estimate based upon railway shipments, and from inquiries made at the centers of the wool trade in 1879, by Maj. T. B. Brooks, the yield of wool amounted to 10,500,000 pounds,* produced by 5,000,000 sheep, being an average of a trifle over two pounds to the head. The value of the wool in local markets is from 10 to 20 cents per pound. The yield from native sheep is placed at one pound per head, and from thence through half-breed blooded stock and to fine California merinos, six pounds per head.

RAMSEY MILLETT HUDSON K.C. MO.

WOOL WAREHOUSE.

The annual increase in sheep will average 80 per cent., worth on the ground (1884) from 75 cents to $1.25.

---

**Wool Clip of 1884:* Louis S. Fiske & Co., wool commission merchants, of Philadelphia, in a circular issued by them on the first day of January, 1885, giving the wool clip of the United States for 1884, by States and Territories, foot the aggregate, 302,954,000 pounds.

In this circular New Mexico stands fourth upon the list. Thus, Texas produced 47,742,000 pounds; California produced 37,318,000 pounds; Ohio produced 30,000,000 pounds; *New Mexico produced 26,610,000 pounds.* It thus appears that New Mexico produced in 1884 nearly one-eleventh of the whole wool clip of the United States.

The number of cattle in the Territory is estimated at 800,000 head, yielding for market about 135,000 head annually, worth on the ground from $20 to $35 per head.

The improvement of the breeds of cattle and sheep has already greatly enhanced the profits, and this fact has become so apparent that no doubt exists but what in a short time the cattle and sheep will equal those of the best grazing regions of the United States.

## TANNING OF LEATHER.

Cañaigre, a local name for a root bearing the botanical name of *Rumex Hymenosepalum*, is a plant growing wild in great abundance in many portions of New Mexico, and contains, according to reliable analysis, a large percentage of tannic acid, an astringent necessary to the process of tanning leather. While the tanning properties of this plant have been known for centuries to the Mexicans and Indians, and by them used for that purpose in a rude way, it does not seem to have attracted the attention of manufacturers in any practical sense. The known growing scarcity of oak and hemlock bark, of sumac and other tannic acid bearing products, in common use for the manufacture of leather, will naturally bring cañaigre into demand. In the articles following in the appendix, under Bernalillo and Dona Ana counties, respectively, will be found analyses compiled from official sources touching upon this question that are worthy of consideration.

## SOAP.

The indigenous plant, popularly known under the various names of soap weed, palmilla and amola, is used universally by the Mexican people in its native state. The root of the plant is pounded so as to loosen the fiber and break the cells containing the detergent properties, whereby the latter may be brought in contact with the water. It is in common use in New Mexico, both in washing of woolen and cotton fabrics, and in the cleansing of the hair and scalp. The plant is probably the same as known to California by the botanical name of *Phalangium pomaridianum*. The plant grows in great abundance in New Mexico, and is already becoming an article of commerce in the manufacture of soaps and hair dressing.

Also, *see* Valencia county in appendix, under title "Soap."

A MODERN AGRICULTURAL RANCH, NEW MEXICO.

## THE PUBLIC LANDS.

The laws of the United States, relating to the disposition of public lands, are well adapted in a country like New Mexico to place in the hands of a few men a monopoly in stock raising. The Territory suffers most from a want of permanent water. There are in many places small streams and springs, which supply water to large herds of stock. These are located under the homestead laws, or otherwise obtained, with a view to controlling the lands for miles around. Persons thus possessed of the water have the benefit of pasturage of large tracts, which belong to the Government, without cost. If the policy were so changed that the public domain could be surveyed into tracts relative to the water supply for the same, and into tracts suitable to a yeomanry or to a homestead system, stock-growing monopolies would be prevented, and the country generally could be settled and occupied by stockmen having families on the ground, and what is more, having an abiding, personal and immediate interest in good order, low taxes and the permanent prosperity and growth of the Territory.

The existing laws thwart their own purpose (which is to distribute lands among the people to the fullest extent possible) in all this dry and mountainous region. The practical operation is to reinstate the Spanish and Mexican land grant system—those manorial estates which have excluded the poor from the possession of landed property, and cursed so many countries.

## HOMESTEAD EXEMPTIONS.

Under the acts of Congress and the Territorial statutes there is exempted from seizure and forced sale under any process or order of any court of law or equity the ground-plat or portion of lands and the buildings thereon occupied as the residence and property of the debtor, being the owner of a house and having a family, up to the sum of one thousand dollars; and if in the opinion of the creditors, the premises claimed by the debtor to be exempted are of greater value than one thousand dollars, the premises may be exposed for sale. Unless a greater sum than one thousand dollars be offered, the premises claimed as a homestead shall not be sold; if more than one thousand dollars be offered, the premises may be sold; but in that event one thousand dollars of the purchase-money shall be paid to the debtor, and that sum shall be exempt from execution for one year.

The intention and effect of this homestead law is to exempt from execution and forced sale the homestead of each head of a family up to the value of one thousand dollars.

## EXEMPTION OF PERSONAL PROPERTY FROM FORCED SALE.

There is also exempted by law from execution and forced sale for debt the clothing, beds and bed-clothing necessary for the use of the family; firewood sufficient for the use of the family for thirty days, when actually on hand and intended for family use; all religious and school books used by the family; all religious and family pictures; provisions to the amount of twenty-five dollars; kitchen furniture to the value of ten dollars; tools and implements used by the debtor to carry on his trade or business, not to exceed twenty dollars in value; the articles exempt to be selected by the debtor, and their value to be appraised by two disinterested householders of the county.

## TIMBER.

Timber abounds in ample quantities, and is well distributed for local purposes. With care in the prevention of forest fires the supply for home consumption and something for export would hold out indefinitely. It consists of pine, cedar and piñon; the latter especially valuable for fire wood. Ash, oak, maple and black walnut are also found in sections.

## A SANITARIUM.

That the Territory has superior sanitary advantages, as represented in high altitudes, equable temperatures, dry atmosphere, generous sunshine, and mineral and hot springs, is manifest.

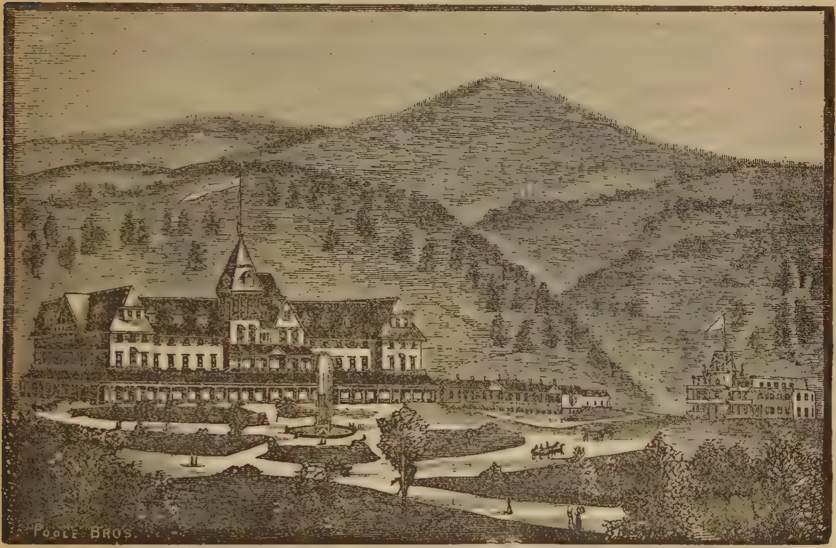
Pulmonary complaints generally experience prompt relief, if the disease is not too far advanced when the patient seeks the benefits. Frequent instances of aggravated cases in consumption, however, have received relief, and life prolonged to ripe old age, simply by approaching the high altitude by slow stages—taking from thirty to ninety days *en route* from the Missouri river. The experience of Dr. Josiah Gregg, an old Santa Fe trader, and author of the "Commerce of the Prairies," is a conspicuous illustration of this class of cases. The story is told in his book. Dr. Gregg, in brief, crossed the plains with a caravan of merchandise, and was three months *en route*. He started on the trip in desperation—as a last chance. Upon arriving in Santa Fe his relief was so satisfactory that he at once engaged regularly in the trade, and continued the business many years, enjoying comparatively excellent health.

The advantage of open-air life on the plains, particularly as experienced in travel and camp life, is efficacious.

Asthma, as a rule, is not benefited, although when "depending on derangement of the stomach," as stated by Prof. E. R. Peaslee, "is sometimes cured."

The best season for consumptives to avail themselves of the benefits of the climate is in June, the more aggravated cases approaching the higher altitude by easy stages.

Rheumatism, cutaneous and venereal diseases experience speedy relief by a few days' or weeks' bathing in the springs, and drinking the waters. Sun-stroke, it is said, never was known in the Territory; this by reason of the low humidity in the atmosphere.



MONTEZUMA HOTEL AND BATH HOUSES, LAS VEGAS SPRINGS.

Heart diseases and nervous complaints would be out of place in this rarified and electric atmosphere. In the mountainous and more humid sections rheumatism is more aggravated; while persons coming to the country afflicted with it experience great benefits in the dry and more sunny sections.

### SANITARY CONSIDERATIONS FOR THE COLONIST.

"The Westward March of Emigration" has stated the case so well that we quote at length: "The entire colonization of the Mississippi valley, from Pittsburg to Middle Kansas, a width of 1,000 miles, has been carried on with the almost universal accompaniment of fevers, due to the breaking up of the new soil, clearing of the forests, exposure to rain, and frequently to the necessity of drinking inferior water. Charles Dickens' description of Eden, in his 'Martin Chuzzlewit,' when his hero is brought to the West, was frequently not much exaggerated. It was lamentably near the truth in too many cases. The terrible 'fever and ague,' oftener than otherwise, struck down whole families on their arrival in the new homes. Reflect on what a terrible burden this wholesale and depressing sickness (the seeds of which often remain permanently in the system) has been upon the first labors of the Western pioneer. He was not only prevented from working when it was most necessary, (at the start of life,) but his little subsistence had to be taxed to pay for medicines and doctor's services for his family.

"What a striking contrast is presented in this respect by New Mexico. The elevation of the country, dryness of the air and proximity of the mountains produce here the healthiest climate in the United States, and probably of the world. Malarial diseases are almost unknown. One can lie down to sleep with nothing but his blanket. Bivouacking is a habit of the people. The newly-arrived emigrant, when poor, often makes himself a 'dug out,' (or cave in the ground,) and lives there comfortably until he can build a house. It has been the custom for many years in the United States for physicians to prescribe for invalids a 'trip across the plains to the Rocky Mountains.'"

### SUNSHINE.

From data taken from a recent newspaper article of repute, and copied from meteorological reports as stated, the following statement is given, showing about 60 per cent. sunshine in favor of observations at Santa Fe, as against New York, and over 200 per cent. as against Greenwich:

The greatest possible annual average of sunshine from 1879 to 1882, was 4,453 hours. In New Mexico there is an average annual sunshine of 3,810 hours, as against 2,671 hours at Central Park observatory, New York, and 1,121 at Greenwich observa-

tory, London. Thus one of the great questions which concerns invalids—dryness of atmosphere—is quite decidedly in favor of New Mexico.

> "Forever sunny, forever blooming,
> Nor cloud nor frost can touch that spot."

Nor must it be forgotten to mention the exquisite beauty of New Mexico sunsets, in the imperceptible but certain landscape changes—

> "From amber and gold so bright,
> To azure and gray so grave."

> "The sky was full of the fairest colors—
> Pink and purple and paly green,
> With great soft masses of gray and amber,
> And great, bright rifts of gold between."

## PERSONAL.

Many persons coming to New Mexico, to remain for a time during the summer, unthinkingly make the mistake of concluding that because Santa Fe is about the same latitude of Memphis, in Tennessee, and Beaufort, in North Carolina, it must necessarily be of the same summer temperature as the latter. Had they thought for a moment that the altitude of Santa Fe is one mile and a quarter greater than points either on the Atlantic slope or in the Mississippi valley corresponding in latitude, they would at once have discovered that its mean temperature would approximate that of the States of New York and Iowa. The year-around temperature of central New Mexico, however, is without the extremes of either winter or summer of the States last named. It should be remembered that in every portion of New Mexico the summer nights, for sleep, are always cool enough to require blankets for covering. In the lower altitudes, summer (mid-day) sometimes attains a temperature equal to the maximum of the Northern States. Mornings and evenings, however, are always comfortable. After this explanation, it is hardly necessary to remind the tourist or invalid, contemplating a visit to New Mexico, to include in his or her wardrobe spring and fall clothing that would be adapted to the north Atlantic coast.

Along the lower Rio Grande malarial diseases have appeared periodically. The first known was in 1821, and since, respectively, in 1857, 1877, and again in a milder form in 1882. This will, no doubt, be overcome by proper drainage.

## COMPARATIVE DEATH RATE.

The comparative death rate, as given in the census reports of 1860 and 1870, makes New England 25, to Minnesota 14, the

the Southern States 6, and New Mexico 3. The same ratio is substantially true with respect to the census reports of 1880, after deducting the mortality among invalids emigrating to the country under railway facilities for travel, and enumerated in the vital statistics of that year.

Dr. Lewis Kennon, a physician of experience, and for many years employed in the army, says: "The lowest death rate from tubercular diseases is in New Mexico."

"Medical Statistics of the United States Army in the six years from 1849 to 1854," referring to the respiratory system, says: "New York, New England and the regions about the great lakes exhibit the largest ratios, and Florida, Texas and New Mexico the smallest, being in the ratio of cases per 1,000 of mean strength: New England, 4.8; New York harbor, 5.9; great lakes, 4.5; Atlantic coast of Florida, 2.3; gulf coast of Florida, 6.9; Texas, southern frontier, 4.0; western frontier of Texas, 3.9; New Mexico, 1.3." "Hammond's Hygiene" testifies to the fact that "New Mexico is by far the most favorable residence in the United States for those predisposed to or affected with phthisis." We are indebted to the Smithsonian report of 1876 for the above quotations.

## THE EXTREME PURITY OF THE ATMOSPHERE.

The amount of ozone (electricity) in the Rocky Mountain regions, especially in this altitude, is relatively much greater than in the central and sea-board States.

Indeed ozone will not tolerate impurities, and they cannot remain in its presence. Hence, the extreme purity of the atmosphere. In illustration, raw meats are cut up and dried, preserved and stored for future use. In spite of the absence of any system of sewerage at such centers of population, among others, as Taos, Santa Fe, Socorro and Silver City, beyond natural drainage and the cleansing coming from occasional copious showers, there is an extreme healthfulness among this people. This fact has made the saying proverbial of the native population, that "it is a country where none die except with their boots on," and of the octogenarian that he "dries up and blows away."

## HUMIDITY, RAIN, TEMPERATURE.

By reference to the reports of the chief signal office of the army, it will be seen, that at the signal service station at Santa Fe, and upon the high line of the continent, humidity ranges a large percentage less than in either the Central, Atlantic or Gulf States. The average is 80 per cent. upon the New England coast and 33 per cent. at the Rocky Mountain stations.

Tables of the precipitation of rain and snow in the United States, published by the Smithsonian Institute, show the following annual mean.

| *Place.* | *Inches.* | *Place.* | *Inches.* |
|---|---|---|---|
| Santa Fe, N. M. | 16.65 | New Orleans | 51.05 |
| Ft. Craig, N. M. | 11.67 | Charleston, S. C. | 43.63 |
| Salt Lake, Utah | 23.85 | New York | 43.24 |
| Ft. Defiance, Ariz. | 14.21 | Boston | 44.99 |
| Yuma, Ariz. | 2.04 | Cleveland, O. | 37.61 |
| Ft. Garland, Col. | 6.11 | Cincinnati, O. | 44.87 |
| Ft. Laramie, Wyo. T. | 15.16 | Huntsville, Ala. | 54.88 |
| Denver, Col. (1875) | 15.24 | Memphis, Tenn. | 45.46 |
| Ft. Bliss, Texas | 9.56 | St. Louis, Mo. | 42.18 |
| Ft. Hoskins, Oregon | 66.71 | Milwaukee, Wis. | 30.40 |
| San Francisco, Cal. | 21.69 | Leavenworth, Kan. | 31.74 |
| San Diego, Cal. | 9.16 | Ft. Gibson, Indian Territory | 36.37 |
| Meadow Valley, Cal. | 57.03 | Ft. Brown, Texas | 33.44 |

The temperature for the year ending June 30th, 1875, in the extremes, stood as follows:

FAHRENHEIT.

| *Place.* | *Maximum.* | *Minimum.* |
|---|---|---|
| Santa Fe | Aug. 2d, 89° | Feb. 24th, 2° |
| Denver, Col. | July 4th, 102° | Jan. 9th, 29° below zero. |
| Colorado Springs | July 11th, 98° | Jan. 13th, 25° " " |
| Salt Lake | July 1st, 98° | Jan. 16th, 5° " " |
| San Francisco | Sept. 14th, 89° | Dec. 26th. 40° |

The monthly maximum velocity (miles per hour) of the wind at Santa Fe, in 1876, stands 24 each for June and December, to 32 in March, and rising to 38 in October. (From 70 to 85 miles to the hour is set down as a hurricane, and a very high wind ranges from 40 to 45 miles.) The following is the meteorological summary at Santa Fe, N. M., for seven years:

[Compiled from U. S. Signal Service Records.]

| *Year.* | *Mean Barometer.* | THERMOMETER. | | | WIND. | | *Rainfall.* | *No. of Days Rain or Snow Fell.* |
|---|---|---|---|---|---|---|---|---|
| | | *Mean.* | *Max.* | *Min.* | *Prevailing Directions.* | *Highest velocity (Miles per hour.)* | | |
| 1874 | 29.756 | 48.9 | 89 | 0 | E. & S. W. | 42 | 19.83 | 97 |
| 1875 | 29.753 | 48.6 | 90 | 2 | S. W. | 50 | 7.58 | 76 |
| 1876 | 29.796 | 48.1 | 89 | –1 | S. W. | 38 | 15.07 | 109 |
| 1877 | 29.809 | 48.3 | 90.5 | 2 | S.W. & N.W. | 43 | 11.10 | 109 |
| 1878 | 29.799 | 47.6 | 97 | –2 | N. | 38 | 19.55 | 103 |
| 1879 | 29.843 | 50.6 | 95 | –13 | E. | 32 | 11.44 | 87 |
| 1880 | 29.81 | 46.6 | 88 | –11 | N. W. | 32 | 9.89 | 88 |

The amount of rainfall at Santa Fe in 1881 was 21 inches, and the beneficial effect was generally apparent.

# MINERAL AND MEDICINAL SPRINGS OF NEW MEXICO.

The mineral and medicinal springs of New Mexico are numerous, and are found in nearly every section of the Territory. They are deservedly popular and universally known in the Southwest, and by everybody familiar with the locality, as possessing in a preëminent degree, for many complaints, the medicinal properties sought at the great health resorts of the world.

For centuries, not only the people of New Mexico, but northern Mexico, and latterly from central and southern Mexico, and from all points near New Mexico, have traveled in private conveyances long and weary journeys, beset by hostile Indians, in order to avail themselves of the curative properties of these springs. Conspicuous among those visiting these springs in early days, were the Franciscan and Dominican friars.

Since the railroad has entered New Mexico from every point of compass, with lines running conveniently near to several of these springs, they are placed within easy and comfortable reach of the world. Good hotels and bath houses and superior accommodations have recently been provided for the rapidly growing demands of invalids and tourists.

Analyses of several of the springs have been made by competent persons, and are herein presented.

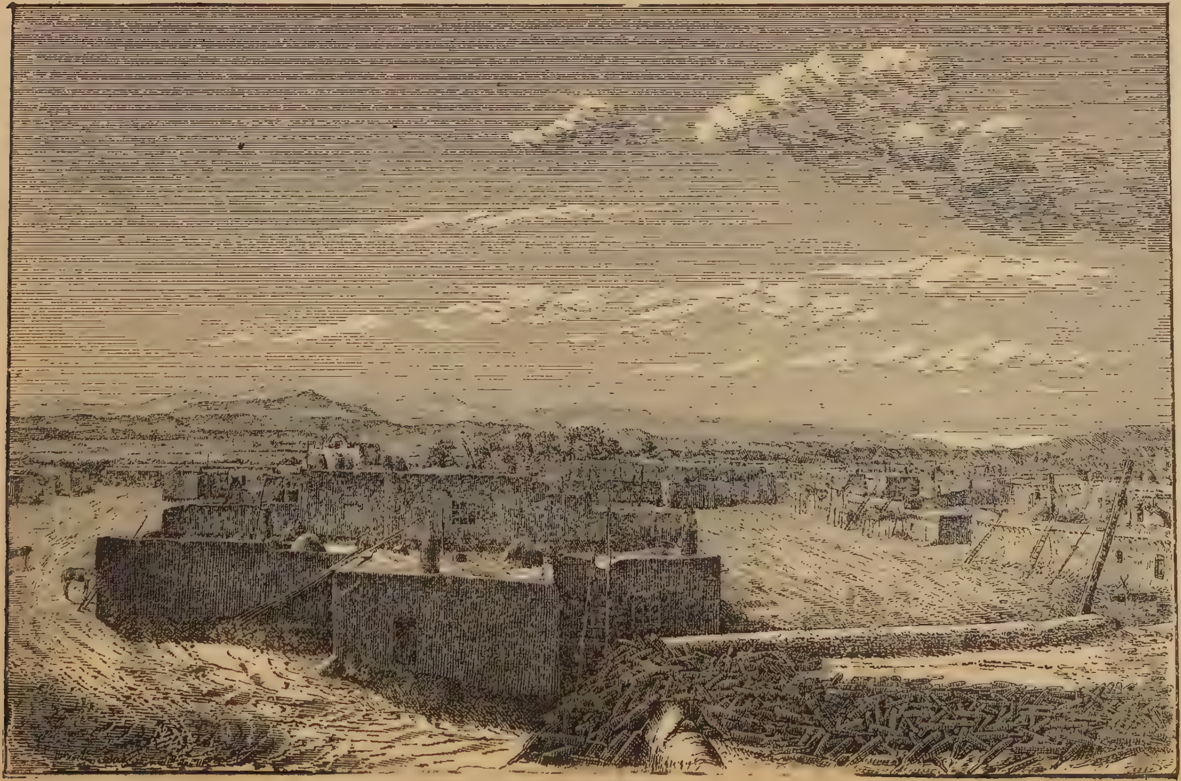
## THE DISEASES IN WHICH THESE WATERS ARE BENEFICIAL.

The following is copied from a statement prepared by the physicians of one of the springs most resorted to, and may be accepted as equally applicable to either of the other springs open to visitors:

"The following ills are almost invariably cured, while many sufferers with other diseases not curable have received great benefit from bathing in and drinking these waters: Chronic and acute rheumatism, gout, scrofula, stiff joints, skin diseases as a class, ulcerations and enlargements of the glands, general physical debility, mental exhaustion, spinal disease, sciatica, lumbago, paralysis, St. Vitus dance, and all neuralgic and nervous affections, catarrh or ozena in all forms, dyspepsia, liver diseases, early stages of Bright's disease, diabetes, goitre, specific locomotion, ataxia, spurious vaccination, and all blood poisons and female diseases. Pulmonary diseases, not too far advanced, are very successfully treated, both the purity of the atmosphere and the mild, equable temperature no doubt contributing largely to the general good result in such cases."

Referring to the same subject, in Wheeler's United States Geological Survey, Prof. Leow says:

"Science as well as experience has demonstrated beyond a doubt that for consumptives the climate of New Mexico far surpasses that of Minnesota, California or Florida."



SAN JUAN INDIAN PUEBLO, D. & R. G. R. R.

## HOTELS AND BATH HOUSES, AND HOW TO REACH THEM.

Las Vegas Hot Springs has two new hotels and bath houses, and is fitted both by nature and art for a pleasure as well as a health resort. It is immediately connected with the Atchison, Topeka & Santa Fe railroad by a branch railway running to Las Vegas station, six miles away.

Ojo Caliente (Taos county), Joseph's, near the ruins of an ancient Indian pueblo, has hotel and bath house, and is connected by daily stage with Barranca station, on the Denver & Rio Grande railroad, twelve miles away.

Jemez Hot Springs, in the cañon, twelve miles above the Indian pueblo of the same name, has a new hotel and bath house and is connected with Bernalillo station, on the A. T. & S. F. R. R.; distance, forty miles.

Hudson's Hot Springs has a well established hotel, with bath houses, and is connected by railroad with Deming junction, on the A. T. & S. F. and Southern Pacific; distance, 25 miles.

### JEMEZ HOT SPRINGS.

There are two distinct groups of warm springs in the valley, two miles apart. The springs of the lower group consist of six in number, the chief of which is a geyser with a surface of sixty square feet, and an aperture of one square foot. The temperature is 168° F.; large quantities of escaping carbonic acid keep the water in violent agitation; thick deposits of snow-white crusts are formed, consisting chiefly of carbonate of lime. This spring yields about fifty gallons of water per minute.

(*Analysis by Prof. Leow.*)

The water of the geyser contained, in 100 parts:

| | |
|---|---|
| Chloride of sodium | 0.1622 |
| Sulphate of soda | 0.0035 |
| Carbonate of lime | 0.0641 |
| Carbonate of magnesia | 0.0103 |
| Potassa, Lithia, Silicic acid, Sulphate of lime | Traces. |
| Total amount of salts | 0.2401 |

Tests were made for iodine, in the evaporation of residue of several gallons of the water, but none was detected.

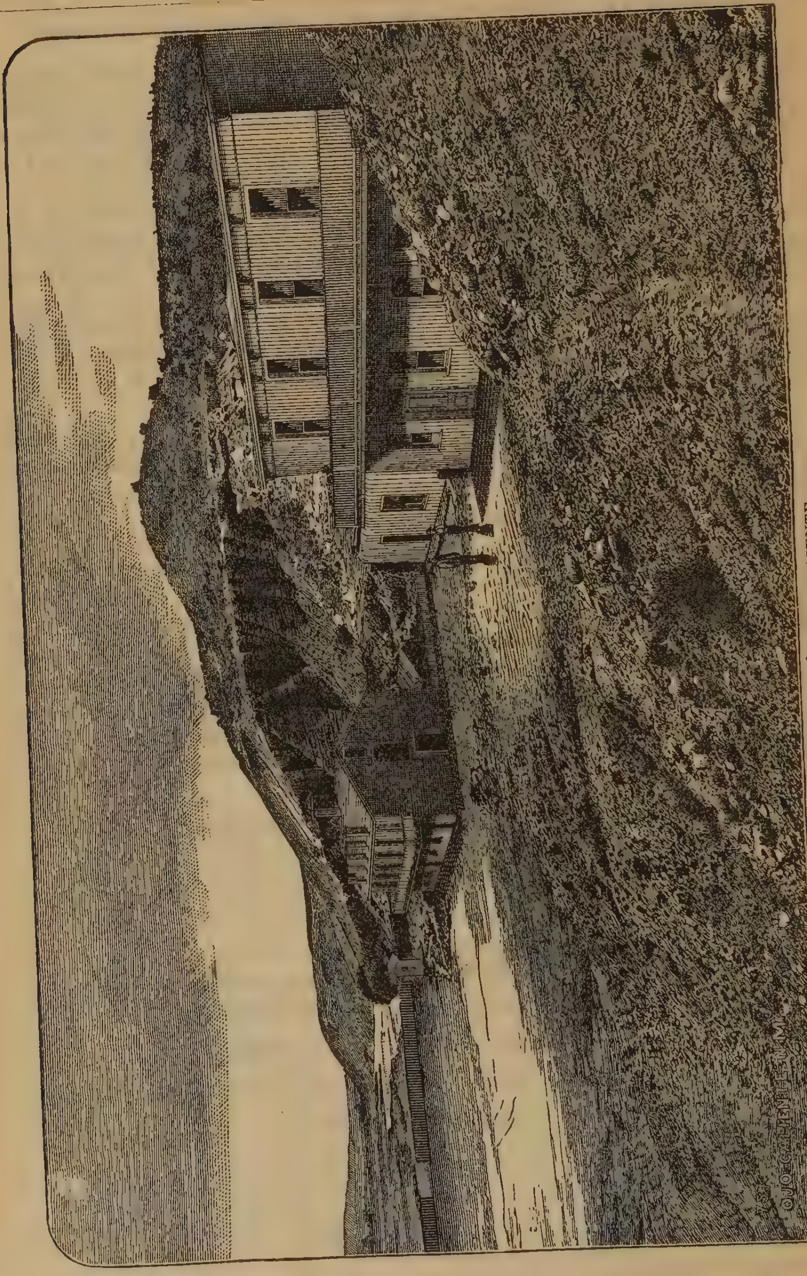
### SAN YSIDRO SPRINGS (NEAR JEMEZ.)

Its waters are rich in carbonic acid and of very agreeable taste.

(*Analysis by Prof. Leow.*)

It contains in 100 parts:

| | |
|---|---|
| Chloride of sodium | 0.3072 |
| Sulphate of soda | 0.1639 |
| Carbonate of lime | 0.0670 |
| Carbonate of magnesia | 0.0246 |
| Carbonate of iron | 0.0008 |
| Potassa, Lithia, Silicic | Traces. |
| Total | 0.0563 |


OJO CALIENTE, N.M.
MOSS ENG. CO.

JOSEPH'S OJO CALIENTE.

### JOSEPH'S OJO CALIENTE.

Of this group of springs there are four in number, of nearly the same analysis, of which the analysis is here given of No. 1. It has a basin twenty feet long, nine feet wide, and a temperature of 114.5° Fahrenheit. In one hundred thousand parts of water, as analysed by Prof. O. C. Marsh, of Yale College, copied from a business circular, are contained parts, as follows:

| *CONSTITUENTS.* | |
|---|---|
| Sodium carbonate | 196.95 |
| Calcium carbonate | 4.20 |
| Iron carbonate | 20.12 |
| Sodium chloride | 40.03 |
| Lithium carbonate | 1.22 |
| Magnesium carbonate | 6.10 |
| Potassium sulphate | 5.29 |
| Silicic | 4.10 |
| Arsenic | 10.08 |
| Total | 288.09 |

Gases, carbonic acid.

Prof. Leow says of the waters: "They are of good quality." The flow is copious.

There are a number of soda springs three miles above Ojo Caliente on the same stream, located above the bluff, and whose collective flow descends in considerable volume, and forms an interesting veil or sheet of water as it breaks over the brow of the bluff. A cave beneath the latter has been found, having on all sides deposits from the water. Its depth is about forty feet, and six by eight feet in size. The bluffs are likewise of the same formation. There are also at El Rancho, near the county seat of Taos county, other mineral springs possessing a good local reputation.

### LAS VEGAS HOT SPRINGS.

The temperature of these springs range from 90° F. to 130° F., and there is a large number of them. No. 1. has a basin six feet deep, five feet long, four feet wide; taste, weak saline; no odor observable; bubbles of carbonic acid constantly rising; yield, about fifteen gallons per minute.

(*Analysis by Prof. F. V. Hayden.*)

It is copied from the business circular of the Springs.

| *Constituents.* | *Spring No. 1.* | *No. 2.* | *No. 3.* |
|---|---|---|---|
| Sodium carbonate | 1.72 | 1.17 | 5.00 |
| Calcium "<br>Magnesium " | 1.08 | 10.63 | 11.43 |
| Sodium sulphate | 14.12 | 15.43 | 16.21 |
| Sodium chloride | 27.26 | 24.37 | 27.34 |
| Potassium | Trace | Trace | Trace |
| Lithium | Strong trace | Strong trace | Strong trace |
| Silicic acid | 1.04 | Trace | 2.51 |
| Iodine | Trace | Trace | Trace |
| Bromine | Trace | Trace | Trace |
| Temperature | 130° F. | 123° F. | 123° F. |

There is another, but a cool mineral spring, three miles northeast of Las Vegas, and two miles east of Green's ranch. It showed the following composition:

*(Analysis by Prof. Leow.)*

In one hundred thousand parts of water, are parts as follows:

| | |
|---|---|
| Sodium carbonate | 120.00 |
| Calcium carbonate<br>Magnesium carbonate | 13.73 |
| Sodium sulphate | 5.26 |
| Sodium chloride | 6.41 |
| Silicic acid | Trace. |
| Total | 145.42 |

### SANTA FE SPRINGS.

Four miles east of the city of Santa Fe, and a mile northerly of the reservoir, is a mineral spring well known to the old Mexicans, and which, in generations past, was much resorted to by Franciscan friars and others, in cases of general debility and in nervous complaints. With the general changes incident to revolutions and conquests during the past two generations, this spring has been almost wholly lost to memory.

The attention of a physician at Santa Fe was, in 1882, called to it, and upon some inquiry and a casual examination, he was prompted to make a careful analysis, such as was possible with the means at hand. Taking one gallon of water, the result was as follows: 21½ grains of solid matter, dried by a temperature of 212° F.

*CONTENTS OF THE SOLID MATTER.*

| | | |
|---|---|---|
| Proto-Oxide of Iron. | | Medium. |
| Lithium. | | do |
| Magnesium. | Carbonate. | Prominent. |
| Potassium. | do | do |
| Sodium. | do | do |
| Chlorine. | Acid. | Proportionate. |
| Carbonic. | do | do |
| Sulphuric. | do | do |

The flow from the spring is copious. It is situate at an altitude of about 8,000 feet, with surroundings of pine and cedar trees. But little attention has as yet been given to this spring.

Learning that Dr. Huntington, for many years stationed in New Mexico, and who is now at the head of the Army Medical Museum at Washington, had given some attention to these waters, the writer addressed him a note, with a view to bringing out a letter for publication respecting the merits of this spring. The following is the doctor's letter. The authority is unexceptionable, and the letter speaks for itself:

Washington, D. C., April 18, 1885.

*Mr. W. G. Ritch, Secretary Bureau of Immigration, Santa Fe, N. M.:*

My Dear Sir—Your favor of April 11th is duly received. Regarding the matter referred to in your inclosure, I would say, that about a year ago a small quantity of water from a spring near Santa Fe was sent to me by Mr. John

Ayers, with request that it should be analyzed, with a view of determining its medical value.

The analysis was made at the Army Medical Museum in this city, and although the quantity was too small for a satisfactory quantitative analysis, it was found to be a clear, soft water, agreeable to taste, containing eighteen grains of solid matter to the gallon, the principal ingredients being soda, lime and magnesia, in form of bicarbonates, chlorides and sulphates, with traces of iron. It resembles many of the German spring waters, and will probably be found to be beneficial in affections of the bladder, in catarrh, and in some forms of dyspepsia. It should be a gentle tonic, and as such beneficial in cases of debility and exhaustion. So far as I remember, it recalls the waters of the Jemez springs, so celebrated in the past for their medicinal virtues.

From my long residence in all parts of New Mexico, as a medical officer of the army, I am much interested in the development of the country, and if I can be of any service to you, please let me know.

Thanks for the pamphlet, illustrative of New Mexico, accompanying your letter. I am, very respectfully, Your obedient servant,

D. L. Huntington,
*Surgeon U. S. A.*

Analyses of the southern springs have none of them come to hand, although every effort has been made to obtain them.

## RELIGION.

The following upon religion and private schools was prepared by the writer for and published in the Blue Book of New Mexico for 1882:

The prevailing religion is largely Roman Catholic. The Territory, with the State of Colorado and the Territory of Arizona, constitute an Arch-Episcopal See or province of this faith, with Santa Fe as the metropolis, and His Grace, the Most Rev. John B. Lamy as primate. Associated with him in New Mexico is a council of five priests, two vicars general, and a total of fifty-six priests. There are also reported in Sadlier's Almanac, six convents, four colleges, one hospital, seven orphan asylums, and a Roman Catholic population, including 1,200 Indians, of 126,000. The southern portion of the Territory, comprising the counties of Doña Ana and Grant, is attached to the diocese of Arizona, and is represented by sixteen priests. The Jesuits, as an organization, are represented in considerable force, having a provincial of the order and an ably-conducted newspaper on the ground. The Christian Brothers, the Sisters of Loretto, the Sisters of Charity and the Sisters of Mercy are likewise represented in considerable force. Protestant denominations are represented by the Episcopals in a new missionary jurisdiction, including New Mexico and Arizona, with the Right Rev. George Kelly Dunlop as primate, residing at Las Vegas, and having six clergymen in the jurisdiction.

The Presbyterians and Methodists are represented in the principal towns by a dozen or more clergymen each, and communicants to the number of 700 each, and probably five times as many more in sympathy with them if not all attendants at church. The Baptists, Congregationalists and Southern Methodists have each a couple of clergymen on the ground, and bid fair to become permanent. The Mormons have also gained a foothold along the western border of its domain.

## EDUCATION.

All the Protestant denominations have Sabbath schools connected with their churches, and probably command an aggregate attendance of 2,000 children. The Roman Catholics are represented in all the more important towns and neighborhoods by parochial and academic schools, variously under the charge and control of the Christian Brothers, Jesuits, Sisters of Loretto, or Sisters of Charity, and largely supported in most of the counties by the public school funds. This church and its orders have erected fine edifices, especially at Santa Fe, Las Vegas and Albuquerque. The Protestant denominations are also represented at the capital and in the larger towns by primary and academic schools, which constitute an important feature in the present educational facilities of the Territory. Commodious school buildings have been erected for their accomodation at Santa Fe, Albuquerque and Las Vegas.

The latter schools are supported wholly either by private contributions or by tuition fees, much of the money coming from abroad.

### PUBLIC SCHOOLS.

Governor Sheldon, in his report to the Secretary of the Interior for 1884 remarks as follows, with respect to public schools:

"The Legislature also passed a school law, which is an improvement on any the Territory ever had, although it is by no means up to the advanced ideas of the times. The advantages of the new school law are that it creates a tangible system, and it is simpler and more efficient. It imposes greater restraints upon improper expenditure of the school funds, and severe penalties for abuses and neglect of duty on the part of school officers, and it should be added that duties are more specifically and clearly defined. There is also an increase of tax to the extent of one-half mill on the dollar for school purposes. I estimate that the school fund of the Territory, on the basis of the present assessments, will be nearly $100,000, including the sum derived from the poll tax. The law also contains such requirements as comply with the conditions of the educational expenditures contemplated in the bill which passed the United States Senate during the last session of Congress, and which is pending in the House of Representatives. If it should pass the latter body—and the people of New Mexico all desire that it should—it will give the Territory nearly $100,000 out of the national treasury at the present time, and an increase in the future, which, when added to our own educational revenues, will place our schools on a prosperous footing. Surely no field in the United States offers a richer opportunity for improvement in educational affairs than New Mexico.

"Taxation in the Territory is as follows: Five mills for Territorial purposes, three mills for schools, two and one-half mills for county purposes, one-half mill for interest on penitentiary bonds, and one-fourth mill for interest on capitol bonds—total, eleven and one-fourth mills. For the next few years the tax to pay the interest on the capitol building bonds may be one-third of a mill, but as taxable property increases it will be less. In some of the counties a small tax is imposed to pay interest on local indebtedness. A light license tax is levied on a few trades and occupations, the proceeds of which are divided equally between the Territory and several counties. A poll tax of $1 per capita is levied on all able-bodied male inhabitants, which goes to the support of schools, and while the assessor's returns show the number of such persons to be 32,000, the revenue received will probably not exceed $12,000 or $15,000."

## ASSESSMENT AND COLLECTION OF TAXES.

Governor Sheldon says of this subject, in his report to the Secretary of the Interior for 1884:

"Notwithstanding the hard times, the assessment returns show an increase in taxable property since last year to the extent of $4,000,000, and assessments do not by any means embrace all the taxable property. The increase in three years has been $16,000,000. The law exempts railroad property, except that of the Atlantic & Pacific, from taxation for six years after the completion of the respective roads. On the 1st day of March, 1886, at least $4,000,000 of railroad property will be taxable, and the next year thereafter $4,000,000 more will be added. In the course of five years $10,000,000 of railroad property will be subject to taxation, that now contributes no revenue to the government. Many thousand head of cattle have been brought into the Territory since the

1st of last March, and much other property has been added that will be taxable next year. Hitherto the probate clerks have been *ex officio* assessors, but the Legislature at the last session made the assessor a separate officer, and the purpose of the people seems to be general to choose men who will see to it that assessments are complete and impartial.

"The Territory has a floating debt, which is usual when court and other expenses accrue most largely during the first six months of the year, and taxes not payable till the 1st day of September and not enforceable till the 1st day of November. The taxes now due and receivable before the 1st day of November should be considerably in excess of the present outstanding warrants and the current expenses from this time to the 1st day of January.

"The Legislative Assembly at the last session authorized the construction of a penitentiary, and the issue of the bonds of the Territory for that purpose, to an amount not exceeding $150,000, payable ten years from date, with interest at 7 per cent. per annum, payable semi-annually. On the 1st day of July last $75,000 of the bonds were issued, and the board of managers has directed that the remaining $75,000 shall be issued on the 1st day of January next. The law also imposes an annual tax of one-half mill on the dollar on the taxable property of the Territory to pay the interest on the bonds as it becomes due, and to create a sinking fund to pay the principal of said bonds. I estimate that this small tax will be sufficient to pay the interest and extinguish the principal inside the ten years they are to run. The Territory is paying out a large sum of money annually for transporting and maintaining her prisoners abroad, and this expense is rapidly increasing, which may be saved to the Territory if, when completed, the penitentiary is properly managed. If I am mistaken in this calculation, and it should turn out that it will cost as much to keep the prisoners in the Territory as elsewhere, the people will reap the advantage of having the money expended at home rather than in a distant country. The construction of a penitentiary is a measure of economy, and its existence in the Territory will have a restraining influence upon the criminal element.

"The Legislature also passed an act authorizing the construction of a capitol building, and the issue of bonds for that purpose to the amount of $200,000, payable twenty years from date, with interest at 7 per cent. per annum, payable semi-annually, and imposed a tax sufficient to pay the interest for fifteen years, and thereafter a larger tax to pay the principal of the bonds. A tax of one-third of a mill will be ample, probably, for the next few years to pay the interest, and thereafter a smaller tax will be sufficient. The law provides that $100,000 of the bonds shall be issued this year, and $100,000 next."

## LAND GRANTS.

Of land grants, Governor Sheldon says:

"New Mexico seems to have been well covered with grants of land, real or pretended, while under the dominion of the Spanish and Mexican governments. The lands embraced in these having been withdrawn from entry and sale, are effectually in mortmain until the question as to their validity is finally settled. Title to these lands is uncertain, and their settlement and development are prevented to a great extent. Quite a number of these claims are unconfirmed, and little or no effort has been made to procure their confirmation. Charges of fraud and crime are made as to some that are confirmed, such as forgery of papers, perjury, subornation of perjury, and false and erroneous surveys. This fact and the lapse of time challenge the utmost scrutiny into those which may be presented in the future. It would be the greatest blessing if an early day could be set when the land-grant incubus should be entirely removed from this Territory. It seems to me that it would not violate the stipulations of the treaty of Guadalupe-Hidalgo, if a time were fixed within which applications for confirmations should be made, and if not made within such a period, that they be forever prescribed.

"I respectfully suggest that the period be short, and follow the precedent of the last act relating to the confirmation of grants in Louisiana and Missouri, which was three years."

## MODERNIZING.

To mention a few human activities added, or to which force has been given during the past three years; civic societies are represented in Masonry, Odd Fellowship, Good Templars, Knights of Pythias, and United Workmen. An annual Territorial Exposition was organized in 1881, at Albuquerque, which has held four exhibitions, with encouraging results. The miners and stock growers have each organized for mutual benefit.

One hundred postoffices have been established, chiefly within the past three years. Educational facilities have been largely increased. The Historical Society has been revived at Santa Fe. Gaslight, water works, the telephone and horse railroads are among the modern improvements found at Santa Fe, Las Vegas, Albuquerque and elsewhere. Forty-six stamp mills and reduction works have been erected or are in course of erection in various mining centers; some of them, however, by reason of want of funds, mismanagement or corporate manipulation, are not in operation. Grand hotel edifices, with first-class appointments, and substantial business blocks and fire-proof warehouses, are to be seen in all the principal towns. Manufactories of various kinds are springing up, and a general look of permanence is apparent.

Since New Mexico has been favored with rapid transportation, newspapers have more than doubled in numbers, quadrupled in quality, and in circulation undoubtedly command a dozen times the number of readers that they did prior to that date. Where there were no dailies then there are now eight, some of which in quality are equal to the best upon the high line of the continent. There are likewise two semi-weeklies, twenty-seven weeklies, and two monthlies. All this, and 15,000 of skilled industrial operatives, have followed in the wake of the building and operating of twelve hundred miles of railroad.

## OPPORTUNITIES FOR MANUFACTURING.

> "Coal, iron and salt are the powers of England. Coal, iron and salt made her the empress of the seas, and the workshop of the world. On this basis she has stood the supreme nation of the world."—*Hon. W. D. Kelley, twenty-four years a member of Congress from Pennsylvania.*

New Mexico not only has coal, iron and salt in unlimited quantities, but, as herein shown, also has in immense quantities scores of other articles of raw material most valuable as contributors to the wealth of the empire. The following is presented in conclusion:

The great abundance of coal and coke in New Mexico, of a superior quality, and the corresponding scarcity or entire absence of the same articles in the States and Territories adjacent and in the republic of Mexico, especially when accompanied by the immense quantities of iron, and an abundance in variety of other desirable raw material for manufacturing purposes, in the immediate vicinity of these coal and coke fields, constitutes a simple fact that must of necessity make in a few years a great manufacturing center of the territory of New Mexico.

In the shipment of the wool clip of New Mexico, amounting, according to the last census to 10,000,000 pounds, one-half of the wool to-day goes to the middle-men and transportation. Here is from ten to fifteen cents per pound standing—legitimately considered—in favor of home manufacturing. With an abundance of pure water and water-power and coal in the Territory, and rapid transportation at reasonable rates, home manufactories of woolen goods will naturally follow. The surplus articles manufactured, not demanded for home consumption, could and would be transported to market as cheaply as the raw material. Northern Mexico and the States and Territories adjacent to New Mexico would, for the reasons before stated, become the immediate customers for these and other manufactured articles.

What is thus true of wool is likewise true in a greater or less degree of other raw material, including iron for railroads, foundries and machine shops, nails and bar iron; of copper, zinc, lead, coke and coal for the million; of many articles of wood and willow ware, sash, blinds and doors; of manganese, marble and precious stones; of plaster paris, kaoline, and cañaigre (tannic acid) for tanning leather; of amole for soaps and hair invigorators; the cactus fiber plants for cordage and paper, and silicate (free from iron) for glass; of fire and potters' clay, and the fruits in horticulture and pomology; of vegetables and meats for canning, soda, lime and cement; of mineral paints, salt and milk for creameries and butter; of mica, sulphur, hides, plumbago, and milling the cereals; of nurseries of fruits and ornamental trees, plants and shrubs; and, finally, of gold and silver reduced, refined and manufactured all at home into articles of vertu and utility. Tens of thousands of opportunities are thus open to capital and skill, simply for the taking.

Transportation by rail already centers upon the Territory from each of the cardinal points, by four separate and distinct corporations, including through lines to the cities of San Francisco, of Mexico, and Guaymas upon the Gulf of California; and more railroads have been projected, are being built, and are coming to assist in the demolishing of the wall of restricted intercourse, which has ever rested as a pall upon New Mexico in its isolation, antedating the coming of railway transportation.

It is the glory of modern civilization to exalt every social value, to demolish every social wall or partition between the liberal and useful arts, to shed the light of science on the industrial processes, and to bring all the honest avocations of men and corporations into harmonious action.

Add to the immense manufacturing probabilities apparent of New Mexico its wonderful capabilities in mining, growing of live stock and agricultural and vinicultural products, and I ask where, upon the face of the globe, under a stable government, is to be found unoccupied in any considerable degree a country that affords so many and varied opportunities for legitimate business enterprises, for well-directed efforts, for intelligent manhood, for skilled industry, for capital seeking profitable investment, and for bringing all honest avocations into harmonious action?

The strength of the opportunities in New Mexico, be it remembered, consists in their diversity. Where a community is dependent upon some one, or upon restricted opportunities for business, and reverses come, great is the depression and suffering of the people. Not so where there is a large diversity of resources and occupations. In the latter condition a few occupations failing, numerous others remain in which to seek and obtain relief, and the consequence is, stability in general prosperity, in the employment of labor, and in government.

Such is the condition to which New Mexico has been and is being elevated by railroads. So highly is this fact appreciated by railway capital, in the grand strife to first reach and occupy this virgin field of rich and varied resources, that during less than five years over 1,200 miles of railroad were built within the Territory. The careful consideration of persons seeking homes and business is invited to the facts.

## ADIOS.

Thus are presented the leading facts with respect to New Mexico's resources and advantages. Wealth seeks investment where there is profit, and is unerring in its judgment as no other representative of human intelligence can be. Among the visitors and emigrants attracted to the Territory during the past few years have been the most distinguished personages of the land in every walk of life. Commerce, the professions, skilled labor, capitalists and public officers have all been represented.

Immigration has set in, capital is concentrating upon the land, and the grand opportunities represented in New Mexico's mines, vines, valleys, hills, mesas, and its great health-giving properties, and in its majestic mountains and sublime scenery, are being possessed and enjoyed by the energy, intelligence and wealth of the world. Just here it may be assuring to know that the opportunities are very far from being all taken, and interesting to be reminded that the area of New Mexico, as before stated, exceeds that of solid New England by 57,523 square miles, and that the Territory equals in area New England and New York combined, with New Jersey thrown in.

# THE COAL FIELDS OF NEW MEXICO.

BY OSCAR LEOW, IN LT. WHEELER'S U. S. GEOLOGICAL SURVEY, 1873.

Numerous deposits of coal are found in New Mexico. They belong principally to the cretaceous age; in some exceptional cases, however, to the carboniferous. These coals differ widely in composition and appearance in different localities. They often bear impressions of leaves, particularly the brown coal strata in northwestern New Mexico.

MINING.

## PLACER MOUNTAIN AND LOS CERRILLOS COAL, SANTA FE COUNTY.

This bed is between slate and limestone on the northern slope of the Placer Mountains, thirty miles south of Santa Fe. The coal is compact, massive—not friable nor intumescing. Color, jet black; luster, brilliant; fracture, conchoidal, uneven; specific gravity, 1.45. The coal is probably of carboniferous age, and ranges among the semi-anthracites. Its composition is as follows:

| | |
|---|---|
| Water | 2.10 |
| Volatile, combustible matter | 6.63 |
| Fixed carbon | 86.22 |
| Ash | 5.05 |
| Total | 100.00 |

## TRUE ANTHRACITE.

From the Rio Santa Fe and Rio Galisteo to the Placer Mountains, the country is broken into hills and cañons; in some portions, however, it is nearly level. The principal rocks in the northwestern portion are basalt and sandstone, with hills of gypsum, called in New Mexico, "Hasped" or "Yeso."

The Los Cerrillos Mountains are made up of granite, trachyte and quartzite, and partly, also, of quartzite schist, while the southeastern portion of the region consists of strata of clay, coal, shales and sandstone, which are well exposed in their succession in the cañons, and in the narrow channels or arroyos.

The thickness of the coal strata varies from one-half foot to five feet, and as traced, is one continuous bed through Cañon de los Ojitos, Cañon Chupadra and Cañon de la Chapina; the croppings extend over an area of fully 20,000 acres. Island-like hills of primitive and volcanic rocks jut out through the sedimentary beds.

The original horizontal position of the strata has been changed in several instances to an incline.

In the southeastern portion of this region a trachyte dike of considerable dimensions has penetrated the strata of coal and sandstone, and changed the horizontal position to such an extent that they now dip at an angle of 25° west. The stratum of coal at this place is fully five feet thick, and is overlaid by sandstone about twenty-eight feet in height. The coal is hard, dense, of brilliant luster, and resembles anthracite in every respect.

Its specific gravity is 1.43. Indeed, chemical analysis of this coal *shows the same composition as that of anthracite.* Its best application would be for blast-furnaces and smelting purposes generally; and since there has thus far been no anthracite coal found west of the Mississippi river, the bed in question is of particular interest, and highly valuable.

Although the statement may be superfluous, it may be said that this coal contains no injurious pyrites.

Three specimens were examined—one from a short tunnel in the southwestern portion of the tracts, where the coal was dug or mined forty years ago; another from Cañon de la Chapina, and the third from Cañon de los Ojitos.

| *Constituents.* | *No. 1.* | *No. 2.* | *No. 3.* | *No. 4.* |
|---|---|---|---|---|
| Water | 2.10 | 2.12 | ......... | ......... |
| Gas | 6.63 | 7.2 | 11.74 | 3.84 |
| Fixed carbon | 86.22 | 84.3 | 70.52 | 87.45 |
| Ash | 5.05 | 6.3 | 16.46 | 7.37 |

No. 4 is Prof. W. R. Johnson's analysis of a specimen of Pennsylvania anthracite, for which, see Dana's Mineralogy, page 758.

The specific gravity of true anthracite coal varies from 1.32 to 1.7. The amount of carbon varies in Pennsylvania anthracite from 85 to 93, and in the anthracite of France from 80 to 83 per cent.; further, the amount of volatile combustible matter (gas) varies in different anthracites from 2 to 8 per cent.

In consideration of these facts, we must pronounce the coal a *true anthracite coal.*

Dr. J. L. Leconte, who examined specimens of this coal before, came to exactly the same conclusion.

Iron ore of a superior quality is found in immediate proximity to the coal beds.

## COAL FROM THE RIO PUERCO OF THE EAST, NEAR NACIMIENTO, BERNALILLO COUNTY.

The strata of brown coal is freely exposed in the perpendicular walls of the mesas, and are accompanied by shales, slate, clay and sandstone. Their thickness varies from six inches to eight feet. In some instances the strata have been partially destroyed, and undoubtedly by fire, as evidenced not only by the accompanying clay being turned into brick, but also by heaps of slag composed of silicates of iron and alumina. This brown coal frequently contains a yellowish resin, which has been subjected to analysis. It is bituminous, and of cretaceous age, not coking, very brittle, somwhat laminated; luster, dull:

| | |
|---|---|
| Water | 6.00 |
| Volatile matter | 37.49 |
| Fixed carbon | 52.28 |
| Ash | 4.23 |
| Total | 100.00 |

## COAL FROM SILVER CITY, GRANT COUNTY.

This bed is said to be of moderate extent. I did not visit the locality in person, but obtained a specimen of the coal at Silver City. It is compact, massive, very hard, not intumescing; luster, metallic; fracture, chonchoidal, splintery. It belongs to the semi-anthracites. Its composition is as follows:

| | |
|---|---|
| Water | 2.13 |
| Volatile, combustible matter | 4.86 |
| Fixed carbon | 86.56 |
| Ash | 6.45 |
| Total | 100.00 |

## COLFAX COUNTY COAL (RATON AND TRINIDAD.)

Following is a reference to the coals of the Raton fields at Trinidad. Prof. C. D. Wilbur, of Chicago, says:

"We trace the same system to the west, and southward to Cimarron, New Mexico; thence to Santa Fe and beyond, where this system of coal deposits has been changed to anthracite by the same forces or causes as have produced the anthracite coal fields of Pennsylvania."

The distance between the points here spoken of is more than 200 miles, and adjacent to these coal fields iron ore in great quantities has been discovered. In the same report, Professor Wilbur further says:

"The coals of this region, which may be referred to as the Trinidad coals, because by that name they are readily known, are much superior to the Colorado coals found in the vicinity of Cañon City and Denver. They are by far the best that have been discovered in the Rocky Mountains. They are equal to the best bituminous coals in Illinois, Ohio and Pennsylvania."

He further says:

"In proof of this statement I will quote from the report of Mr. Ellers, before the American Institute of Mining Engineers, at Easton, Pennsylvania, October 22, 1873, on coke made from Trinidad coal:

"'This is the first good coke for smelting purposes ever made from lignite alone in America. It has so far always been found necessary to mix bituminous coal from the coal measures (tar or similar material) with lignite, in order to produce a coke, which even then was in most cases only an indifferent fuel for the shaft furnace.

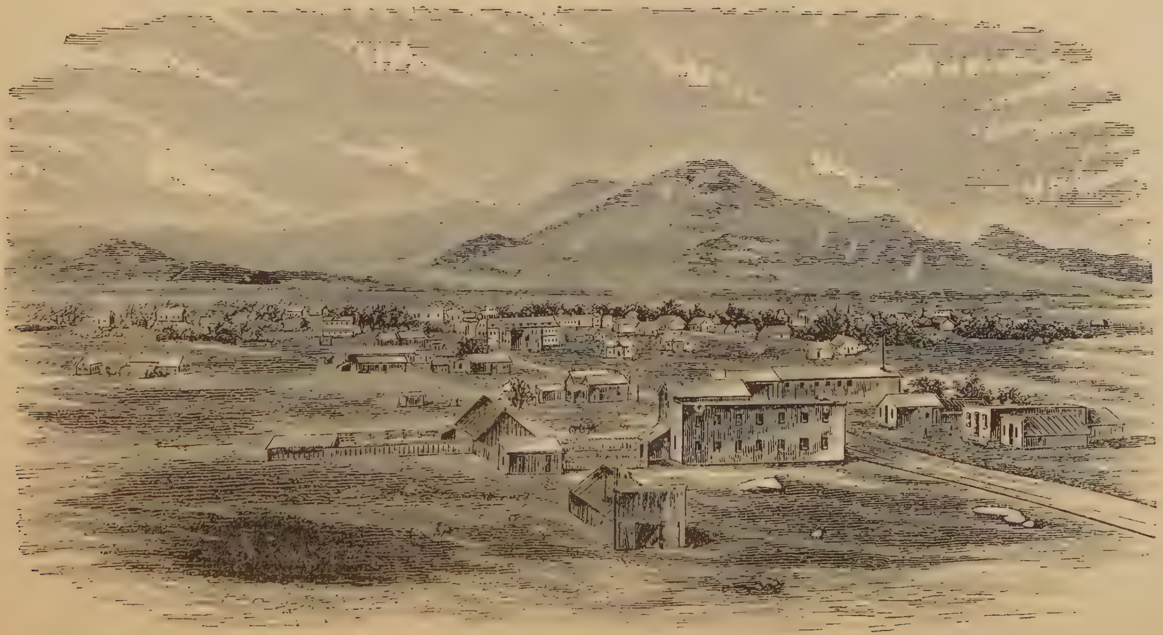
"'The coke here presented will answer for all purposes of lead and copper smelting in shaft-furnaces, and if made in proper coke-ovens it will probably be sufficiently dense to carry the high smelting columns of the iron blast-furnace. One pound of Trinidad coal furnishes 4.25 cubic feet of purified gas without the use of an exhauster, and 55 per cent. of the coal remains as coke.

"'The importance of this bed of coal for the metallurgical purposes of the far West cannot be overrated, when we know that at present Eastern coke costs at Denver $22, and at Salt Lake City $30 per ton. The recent analysis of Dr. J. A. Sewell, State Chemist of Illinois, made late in December, 1873, still better confirms our statement as to the extra value of these coals. The analyses were made from the New Mexico and Trinidad coals with the same results.'"

"LABORATORY UNIVERSITY OF ILLINOIS,
December 16, 1873.

"Results of analyses of coals sent me by Professor C. D. Wilbur, from New Mexico, December 4, 1873:

| | |
|---|---|
| Specific gravity | 1.2215 |
| Water | 5.80 |
| Ash | 4.17 |
| Total incombustible matter | 9.97 |
| Volatile matter | 36.81 |
| Fixed carbon | 53.22 |
| Total combustible matter | 90.03 |



SOCORRO, AND SOCORRO MOUNTAIN.

"Coke firm and persistent; ash light, resembling the ash of wood. It contains a trace of silver. The coal bears only a slight trace of sulphur. It yields splendid illuminating gas. For locomotive use these coals must rank among the very best. The coke is the most firm and persistent of any I have ever seen.

J. H. SEWELL, M. D.,
*Analytical Chemist, Illinois State University.*"

Professor Wilbur adds:

"It would seem that nothing more could be said setting forth the quality of New Mexico and Trinidad coals." (Raton fields.)

The following analysis also has reference to Colfax coal, and was made from specimens taken near its surface by Frank E. Nipher, Professor of Physics and Chemistry, in the Washington University of St. Louis:

| *Fuel—100.* | *Specific gravity.* | *Lbs. Av. Cub. feet.* | *Moisture.* | *Ash.* | *Color of ash.* | *Coke.* | *Total Volatile.* |
|---|---|---|---|---|---|---|---|
| Top | 1.345 | 84.0 | 2.0 | 9.3 | Brown. | 60.9 | 39.1 |
| Middle | 1.368 | 85.4 | 3.1 | 10.4 | Pink. | 61.9 | 38.1 |
| Bottom | 1.388 | 86.7 | 2.6 | 15.6 | White. | 63.1 | 36.9 |
| Average | 1.367 | 85.36 | 2.57 | 11.76 | | 61.96 | 38.03 |

## FOR COMPARATIVE VALUE OF COALS,

See table of coals, tested by the War Department, copied from General Orders, under Santa Fe county.

## PRODUCTION OF COKE AND COAL.

Rio Arriba county has extensive coal fields at Amargo and Monero, on the D. & R. G. Rly., which are worked principally for railroad supply.

At the Raton mines, in Colfax county, at Cerrillos, near Santa Fe, and at Carthage, in Socorro county, all upon the A. T. & S. F. railroad, and at Gallup and Defiance, in Bernalillo county, upon the A. & P. railroad, and at each of the localities named, are extensive coal fields that are mined. They were first worked about three years ago. The gross output of the several workings above named, for 1883, was 221,270 tons, 75 per cent. of which was used by the railroads. The number of men employed was 500. The value of the coal, at $3 per ton, $663,810. The coals mined upon the Santa Fe road are all either coking or anthracite. The cokes produced from the Cerrillos and Carthage measures rank the highest for metallurgical purposes of any thus far discovered west of the Mississippi river. Anthracite coal is also a product of Santa Fe county. Numerous outcroppings and some development along the Santa Fe range from Namba to Lamy, and between the range and the Rio Grande, indicate that a large portion of the county north of the Rio Galisteo is underlaid with coal.

### A NEW FIND.

Two hundred feet development in the Barnum mine, two miles up Santa Fe cañon from the city, has recently opened out a four-foot face of hard bituminous coal that burns freely. It is brought to Santa Fe in wagons, and finds a ready market for domestic use at $5 per ton.

There are also broad fields of good coal in Lincoln county, near White Oaks; some of it good coking coal. The scarcity of good coal in Texas, and on the Pacific slope, will eventually bring this coal into large demand, and will no doubt constitute the first inducement to connect the Texas and California railway systems with a section valuable not only for its immense deposits of coal, but also for its general mining and live-stock interests.

Commissioner McClure, of Taos county, reports a three-foot vein of coal two miles east of the county seat.

# BERNALILLO COUNTY.

(HON. WILLIAM C. HAZELDINE, PRESIDENT BUREAU OF IMMIGRATION.)

Bernalillo county is one of the central counties of the Territory. It includes from north to south seventy-five miles, and from its eastern boundary upon Santa Fe county west to to the Arizona line, a distance of one hundred and sixty miles.

Its principal agricultural valley is that of the Rio Grande, for a distance of about sixty-five miles. The Rio Jemez and the Puerco are tributaries of the Rio Grande from the west, and the Rio Galisteo and Tuerto tributaries from the east. In addition to these streams, there are numerous springs and a few lesser streams of more or less permanence.

The population is chiefly settled in and near the valley of the Rio Grande, which in Bernalillo county is particularly valuable for agricultural purposes and the products of horticulture and viniculture.

JOURNAL OFFICE, ALBUQUERQUE.

The area outlying from the Rio Grande valley is generally well grassed, is rolling or broken by hills and cañons, has some timber, is well adapted to grazing, and is largely occupied with sheep and cattle ranges, the hills, cañons and timber affording excellent winter protection for stock. The Sandia mountains on the east, and the Jemez mountains in the central portion of the county, and their vicinity, are rich in mineral products, while near the Arizona line are extensive coal fields, located and mined at Gallup and Defiance.

The railroad system is the Atchison, Topeka & Santa Fe railroad, running north and south in the Rio Grande valley, and the Atlantic & Pacific, now completed to Mojave, and which has through running connections. The line of the latter road is east and west along or near the southern boundary of the county, touching at Fort Wingate and running through its western coal fields.

## CITY OF ALBUQUERQUE.

The county seat is Albuquerque, situated on the Atchison, Topeka & Santa Fe railroad, and at the initial point of the New Mexico division of the Atlantic & Pacific railroad. The latter is now running through cars, in connection with the Atchison, Topeka & Santa Fe railroad, from Kansas City to San Francisco, and constitutes the safest winter route from the Atlantic to the Pacific coasts.

Albuquerque (new town) is in many respects a phenomenal city. On the 15th of April, 1880, the construction train hauled by the first locomotive that awoke the echoes of the adjacent hills, first pulled into the then handsome body of farming land ribbed with embankments of irrigating ditches, with the corn stalks and wheat stubbles of the previous year's crop still standing, and where nothing but the surveyor's stakes appeared to distinguish the townsite from its surroundings. The spring of 1881 found the proposed new town consisting of probably a dozen good frame and adobe houses, together with numerous tents, and a cluster of shanties called houses by compliment. Most of the building done the following summer was of the same doubtful character. Thereafter a building boom set in, and a rapid growth and development was apparent, which from the character of the men building, and the class of buildings being erected, indicated faith in the future of the town and a belief in its permanence. Tents and shanties soon gave way to substantial structures of brick and mortar, as well as adobe and wood.

BAKER & CO. CHI.

STREET SCENE IN ALBUQUERQUE.

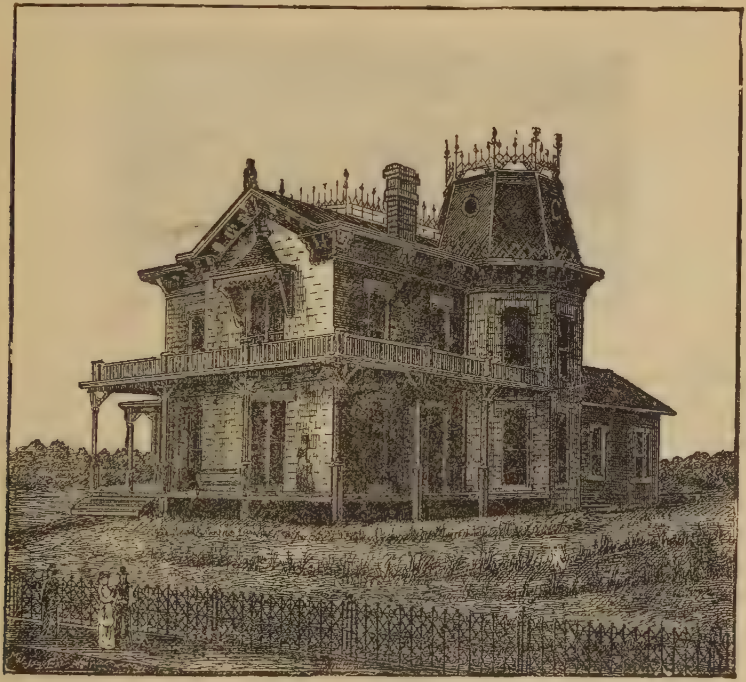
To-day upon the same ground, and including the old town near by, stands the largest city in New Mexico, and the city of stakes above indicated has become a city of creditable permanent structures for business and residences and altogether contains a thrifty population of 10,000 people.

Upon the land which only two years previous was a fallow field are now found graded streets, flanked by good sidewalks, three miles of street car lines in successful operation, a telephone exchange with twenty-five miles of wire, connecting with all parts of the city, streets, residences and business places lighted by gas, (and to which has since been added the electric light,) large and elegant residences, solid blocks of brick business houses, some with iron and plate-glass fronts, two banks, two daily newspapers, six churches, all the hotels, stores and offices necessary to the accommodation of the public, and more and better buildings, public and private, now in course of construction than are being built in all New Mexico together, and yet the foundation for the first brick house in the town had not been laid at the beginning of the year 1882.

The basis of business permanence in Albuquerque will be found in the broad, rich agricultural valley extending for miles both north and south of the city, bordering upon the principal river in the New West, in the several mining and coal districts in the adjacent mountains, in the location of the city central to the whole Territory, combined with the circumstance that it is already the permanent crossing of the two great continental lines of railway, respectively, running north and south, and east and west, the latter giving that advantageous start in commercial supremacy that will of necessity command still other lines of railroad, some of which are already projected, and that commercial and manufacturing activity and permanence destined to make Albuquerque the metropolis of the Rocky Mountains. It is proper to add that the people of Albuquerque possess that ambition, energy, cohesion and perseverance which augurs success.

## THE INDIAN INDUSTRIAL SCHOOL.

The United States Industrial School, located near Albuquerque on the north, is one of the creditable institutions of the county. It was thus located through the enterprise of its citizens, who, with their characteristic energy, raised $4,500 by private subscription, purchased a farm of 66 acres and donated it to the Government; and thus induced the expenditure of the appropriation necessary to the erection of the buildings. Pueblo, Moqui and Apache children are each admitted. The plan of the school is much after that of the schools at Hampton, Va., and Carlyle, Pa., both of which have done such excellent work in the education of Indian children, including both sexes. These schools combine for their pupils mental and physical labor, rest and recreation, in proportions leading to the best results both as to health and education. The twenty-four hours of the day are divided into five hours for school work, three hours for manual labor, six hours for meals, rest and recreation, and ten hours for sleep. The garden, cultivated by the pupils, supplies the table of the school boarding house. The institution has upon its rolls 164 pupils.



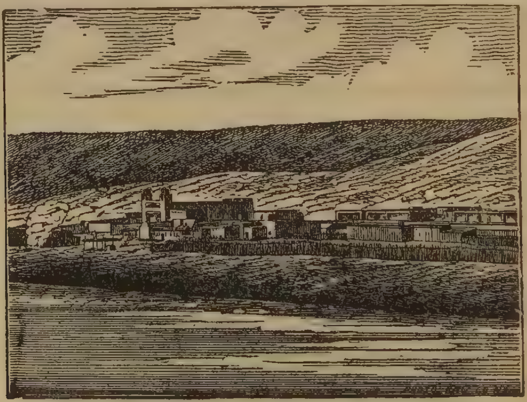
HOME OF HON. M. A. OTERO, BERNALILLO.

## BERNALILLO.

Bernalillo, situate on the A. T. & S. F. Railroad 18 miles north of Albuquerque, is one of the old established towns, constituting the residence of many of the most substantial and influential people of the county and Territory. It is located in the midst of a broad valley of rich, alluvial bottom land, largely devoted to producing grapes and the fruits, as well as agricultural products generally. The marketed fruits of Bernalillo, it is estimated, amount to $100,000 per annum. The wool clip marketed at this point is one of the largest in the Territory. The Jemez river empties into the Rio Grande at this point. The Rio Grande bridge here crossing the river leads to the road following the course of the Jemez to the Jemez Springs and sanitarium. The waters of these springs are among the most efficacious of all the springs in the Territory.

Wallace, the end of a division, and a dining station on the A. T. & S. F. Railroad, is a railroad town situated near the Indian pueblos of Santo Domingo and Cochite and upon the Rio Galisteo. It is the point where the railroad first enters the Rio Grande valley from the north and east.

Besides the Indian pueblos above named, there are also in this county the pueblos of San Felipe and Sandia on the Rio Grande, and the pueblos of Santa Ana, Zia and Jemez. This county was an important center of the aboriginal Village Indians, many of whose pueblos have become extinct, and their sites are now marked only by ruins. The old church at Santo Domingo, torn down a few years since and replaced by a new structure, was the headquarters of the inquisition about the middle of the seventeenth century, and when first introduced into the Territory. Albuquerque was no doubt the site of an abandoned pueblo, probably abandoned before the revolution of 1680, the occupation of which was soon followed by immigrants from Mexico. It was thus continuously occupied, except during the insurrectionary period, ever since. It received its name of "villa of San Felipe de Albuquerque de Nera," in the year 1705, during the administration of the Duke of Albuquerque as Governor and Captain General of the Territory.



ANCIENT PUEBLO OF SAN FELIPE.

Gallup and Defiance are towns on the A. & P. Railroad, that have sprung into existence with the working of the western coal fields of this county.

Peña Blanca, four miles from Wallace, is a Mexican settlement founded by the descendants, as claimed, of Cabeza de Vaca, who came to the continent with the ill-fated expedition of Narvaez of 1528, and who, after shipwreck and many hardships, started from the Gulf of Mexico with three companions, and crossed the continent, taking *en route* the southern portion of New Mexico, as subsequently known, and finally reached a settlement of his countrymen upon the Gulf of California. Amado Cabeza de Baca and Marcos Cabeza de Baca, two well known citizens of Bernalillo county, also residing at Peña Blanca, are the present living representatives of the family.

## EDUCATION.

BY PROF. A. S. M'PHERRON.

Education has been defined to be the full, harmonious and symmetrical development of all the powers of man.

In order to secure this development, schools are necessary, proper courses of study must be adopted, and competent teachers must be employed.

To accomplish this object a uniform system of public instruction, of whose full benefits every child of the Territory may avail itself, should be provided.

We are sorry to be compelled to state that, although various acts relative to schools have, from time to time, been passed by the different Legislatures of the Territory, yet there is no system in operation which can be said in any manner to correspond to that of the Eastern or Middle States. Yet we do not despair of the attainment, in a few years, of this much-desired object. The Yankee is abroad in the land, and he has come to New Mexico to stay. Already, in some of the larger, incorporated towns, the public school house has been erected, and competent teachers employed by means of taxation.

The educational facilities of Albuquerque are not surpassed by those of any town in the Territory.

To supply the place of public schools in this and other Territories until such systems could be provided by proper laws, a party of benevolent-hearted Christian men from the East, while visiting New Mexico four years ago, conceived the idea of founding academies, with a view to having them grow into schools of higher learning, which they foresaw would be demanded in a few years.

Accordingly, on consulting with some of the most wealthy and influential citizens of Albuquerque, a hearty coöperation was entered into, which resulted in the incorporation of Albuquerque Academy according to the laws of the Territory, its articles of incorporation empowering the trustees to organize an academy or such other collegiate or higher institution of learning as the needs of the place might demand.

Thus Albuquerque Academy was opened in the fall of 1879, with a principal and one assistant. It soon passed under the care of the New West Education Commission, of Chicago, which nominates the teachers and contributes largely to the support of the school.

Under its first principal, Prof. Chas. S. Howe, who served for two years, the success and progress of the academy was marked from the commencement, the number of pupils increasing from a mere handful to over eighty.

It was deemed wise by the trustees to remove the academy to the new town at the beginning of the school year of 1882-83, the wisdom of which step was shown in the fact that a greater enrollment of pupils was secured during the first three months than for the whole of the previous year.

The academy is in a most flourishing condition, the enrollment for the last term of the year exceeding that of any other term in its history. The enrollment for the school year ending June 9th will reach about 175.

The school for boys, under the supervision of the Jesuits, as well as that for girls, under the supervision of the Sisters of Charity, are deserving of special mention. There is also, under the supervision of the Jesuits, a college of theology, in which a full course is given.

The Christian Brothers have, also, a school for boys at Bernalillo, which is said to be one of the best of the kind in the Territory.

# CAÑAIGRE.

### BY MAJOR HARRY R. WHITING.

This root, known among the Mexicans by the above name, and specifically called *Rumex hymenosepalum*, is widely distributed and grows plentifully throughout this county, and, in fact, in many other portions of New Mexico. From analysis made by the Department of Agriculture, the root contains about 23 per cent. of tannic acid, and has been used for tanning purposes by the Indians of New Mexico from time immemorial. Experiments have also been made with it by Americans at Albuquerque and in several parts of Texas in tanning. The fresh roots much resemble sweet potatoes in form, but are dark brown in color. In transverse section they are of a bright lemon-yellow color, which changes to red-brown by exposure to the air. They lose water rapidly and become shriveled, and both the dry and fresh roots have a very astringent taste. The following is the analysis:

| | | |
|---|---|---|
| Emodin | Trace | Sol. in alcohol. |
| Yellow resin | .93 | |
| Red substance, solu. in alcohol | 10.48 | |
| Red substance, sol. in water<br>Suyar | 10.44 | Sol. in water. |
| Rheo-tannic acid | 23.45 | |
| Gum pectin, brown color | 6.41 | |
| Albuminoids | 5.21 | |
| Aporetin | 4.78 | |
| Starch | 18.00 | |
| Cellulose | 4.52 | |
| Ash | 4.38 | |
| Moisture | 11.17 | |
| | 99.77 | |

The analysis shows the presence of no substance that would prove injurious to leather, and the large proportion of tannic acid is a good indication. The chemist of the Department states that in many particulars this root resembles rhubarb, and it seems probable that it may be used to advantage in the place of that drug, where a more astringent medicine is needed. In the fresh roots, containing 68.07 per cent. of moisture, the tannin equalled 8.51 per cent. or 26.62 per cent. when calculated to water-free substance. The 23.45 per cent. in the air-dry roots is equivalent to 26.30 per cent. in the strictly dry roots. It would thus appear that the tannin is not affected by long keeping. The bulbs are produced in clusters like some kinds of sweet potatoes, and the leaves and stalks, while green, are greedily eaten by cattle.

The analysis of vegetable substances indigenous to the United States, containing sufficient tannic acid to make them of value for tanning, collected, prepared and exhibited at the Centennial Exposition in Philadelphia, and not including the cañaigre, were as follows:

| | *Per cent.* |
|---|---|
| Ground Sumac (mixed), Winchester, Va | 25.18 |
| Sumac (*Rhus cotinus*), Hallsborough, Va | 24.08 |
| Sumac (*Rhus globra*), Georgetown, D. C | 26.1 |
| Leaves of Sweet Fern, Boston | 9.42 |
| Leaves of *Polygonum amphibium*, Nebraska | 11.6 |
| *Ephedra autirphilitica*, table lands Arizona and Utah | 11.9 |
| Bark of Sweet Gum, District of Columbia | 8.36 |
| Bark of Red Oak, Canton, Ill | 5.55 |
| Bark of White Oak, Canton, Ill | 7.85 |
| Crushed Quaritron bark, Winchester, Va | 6.47 |
| Bark of *Quercus coccinea*, Canton, Ill | 7.74 |
| Bark of *Quercus macrocaspa*, Canton, Ill | 7.85 |
| Bark of Hemlock, Van Ettenville, N. Y | 9.5 |

It would thus seem from a comparison of these analyses with the analysis first given, that the New Mexico product contains more than double the amount of tannin than either of ten of the others substances, and is scarcely exceeded, if at all, by the remaining three. The tanners of the United States use mostly hemlock and oak bark, which, in 1878, according to Mr. Bailey, editor and proprietor of the *New York Shoe and Leather Reporter*, averaged to cost say $5 for hemlock and $9 for oak per cord (2240 pounds, or one ton equal in weight to the cord). He estimates that they used in that year 1,225,000 cords, two-thirds of it being hemlock bark; also 100 tons gambico and cutch worth $80 per ton; 10,000 to 12,000 tons domestic sumac, worth $45 per ton, and 8,000 tons Sicily sumac, worth $85 per ton. Davy gives the per cent. of tannin in the Sicily sumac at 16.20, Esenbeik of gambier at 44.88, and Cooper of cutch at 47.7.

It is found from experiments now being made with the Cañaigre that it can be utilized in the manufacture of *good* leather. The cheapness with which it could be collected, and the practically inexhaustible quantities in which it exists and is being constantly formed, will give to Bernalillo county, and New Mexico at large, another valuable resource.

## GRAPES, WINE AND FRUIT.

BY MAJOR H. R. WHITING.

[*Note by the Editor :*—The following under the above heading is from the pen of a practical viniculturist and horticulturist, and, as stated by himself, applies to the entire valley of the Rio Grande south. The article is, in truth, worthy of careful perusal, and applies to any portion of the Territory.]

### THE RIO GRANDE VALLEY.

Extending across the Territory of New Mexico from north to south are two large valleys—the Rio Grande and Pecos. The former, lying furthest west, reaches from the Colorado line to Old Mexico, and thence on to the gulf. The river from which the valley takes its name being, after leaving the limits of the Territory, and as it flows onward to the sea, the boundary between our sister Republic and the Lone Star State. The stream holds its course in New Mexico through broad and fertile valleys, which now and then abruptly end at cañons, where the channel is confined to narrow limits by the high and rocky banks. The soil is principally composed of silicious and other fertilizing matter, washing from the mountains, brought down by the small creeks and rivers from the north and the sudden freshets in the numberless arroyas or gulches, which latter, though dry the greater portion of the year, are subject to periodical floods. By the spring and summer rises in the Rio Grande, immense quantities of rich mud are distributed through the hundreds of irrigating ditches over the cultivated land, adding yearly to its fertility. As the floods of the Nile to that valley are those of the Rio Grande to this, the onrushing, turbid waters bearing in their restless bosom countless benefits to the cultivators of the soil.

The grape-growing belt extends from about the northern line of this, Bernalillo county, to and through Valencia, Socorro and Doña Ana counties, to the Chihuahua and the Texas line, the valley in Bernalillo county being from one to four miles in width, and susceptible, every foot of it, of cultivation. In the lowest plane, formed almost entirely of alluvium, all of the vineyards are now located, where they can be irrigated by means of ditches, the rainfall being so uncertain that this sure method is relied upon, instead of the fickle showers from the clouds.

### THE VINE AND ITS CULTURE.

The grape most generally cultivated is that known as the "Mission" variety, supposed to have been introduced by the Franciscan friars, and cultivated in the valley for the past two centuries. Some small vineyards of the "Muscatel" are also found, but generally as a table grape, it coming into market a short time before the other.

The vineyards are almost always started from cuttings, planted from six to ten feet apart each way, though some growers prefer to trench the cuttings and root them for planting the first or second year after, in the places where they are to remain. The Mexican method of culture does not require staking or trellising, and the first three years are directed more particularly to giving strength to the main trunk. The vine is closely trimmed each year, all superfluous wood cut away, and only the trunk and a few short branches left, so that a well-cared-for plant of a few years' growth resembles a dwarf tree. It is necessary, in setting out the cuttings, to pack the soil closely about them, to turn the water onto the plant from the irrigating ditch as soon as possible, and when sufficiently dry, repack the dirt. There is nothing more to do the first season, than to irrigate the vineyards at certain intervals and keep the ground free from weeds until November, when the vines are covered with earth to protect them from the cold until spring. The time for uncovering varies among the different growers from the middle of February until April. They are thus allowed to stand for from ten days to a month, and then trimmed. But few grapes will be produced until the third season, but the labor of the cultivator is increased from year to year, in stirring the soil, removing the suckers, staking where needed, trimming, and covering and uncovering. The fourth year, and from that time forward, the vines will be loaded with the delicious fruit. In New Mexico, where so many seeds of useless plants are carried onto the cultivated lands, and distributed over them by the water from the irrigating ditches, an excellent method in small vineyards, or where manual labor is cheap, is to hoe the spaces between the vines into small hillocks, whose locations are changed with each subsequent hoeing. Thus the soil does not crust over after watering, it is easier to hoe after the first hoeing, and the weeds have no chance to take deep root.

A fair yield in this county for a good vineyard is, say, from two to three gallons of wine to a vine, which is worth at home, (1883,) from $30 to $50 per barrel of fifty wine gallons. With the vines eight feet apart each way, there would be 680 vines to the acre, which, at the lowest estimate above given, would yield 1,360 gallons. This is not above the average for a vineyard in fair bearing.

### BENEFITS AND DRAWBACKS.

A more congenial climate than that of the Rio Grande valley for the grape, or a soil more adapted to produce beneficial results in its growth, cannot, I believe, be found all the wide world over. The frosts are usually only severe enough to kill the insects, without injury to the plant; no rainfall when the plant is flowering or the fruit approaches maturity. Such things as late and damaging frosts do sometimes occur. Twice have they visited portions of the valley during my thirteen years' residence therein, singeing the leaves and blossoms, and materially decreasing the yield in some vineyards. During July and August there may be occasional hail storms, which are not partial in the distribution of their favors. They are not general, but may strike here to-day and there to-morrow. I have seen a clean sweep of the fruit made by the hail, three rows of vines in width, and not a vine touched on either side. And this brings to mind another instance of a small vineyard entirely stripped of leaves and fruit, and not a vine injured in the vineyards immediately adjoining on the north and south. These are the drawbacks—the same as other countries are subject to. But New Mexico, or at least this portion of it, is a land of sunshine; and the grape, the creature of the sun, rejoicing in its genial warmth, when nature has brought it to completion, is a perfect work—rich, juicy, delicious, far superior for the table, in flavor, to the best American varieties.

### AN EFFECT OF WINE DRINKING.

Possibly some of the good people of the Atlantic States, who received the Mission grape seed distributed by the Interior Department before the war, had but a poor opinion of it. The story runs that a Major Williams was sent to New Mexico to study the Mexican method of cultivating the grape, and found himself at El Paso, the guest of the hospitable Dons of that lovely border town. Here the Major, under the influence of the famous El Paso wine, purchased and shipped to the department several tons of grape seed, which had been thoroughly boiled in the process of manufacturing sugar from the refuse of the grape, after the expression of its juices.

### WINE MAKING.

It is scarcely necessary for the present subject to give the minutæ of the *modus operandi* of wine making as practiced in this valley. Suffice it to say that labor-saving processes are being introduced, and the old method of treading out the grape by boys and girls, and men and women, is going out of use. From the juice tramped out, a dark-red wine is made, and the lighter kinds are produced from the juice extracted by later and greater pressure. Some of the wine makers of Bernalillo have extensive cellars, employ modern methods, and make several hundred barrels yearly.

### OUR FUTURE.

With the improved methods of culture and modern processes of manufacture, and the influx of men of large experience from our own and other counties, the valley of the Rio Grande will soon become famous, and take its place at the head of the wine and brandy producing districts of the world.

### TREE FRUITS.

Until within a few years but slight attention has been paid in this part of the valley to the culture of fine tree fruits. Small July and October apples, red (wild) plums, fair pears, good peaches, excellent apricots and enormous quinces have been raised successfully by the descendants of the Spaniards from time immemorial; also by the Indians of the pueblos. Experience has proven that the finest apples and pears can be raised in this locality by grafting into the native stock; and my advice would be to any one contemplating the planting of an orchard, to set out the stock where it is to remain, and the second year cut off near the ground and graft into it with scions from fruit-bearing trees of the varieties desired. In this way fruit-bearing trees can be secured much sooner than by planting the standard or dwarf tree from the Eastern nurseries. The grafts, as stated, need tying to stakes for the first two years, to protect them from the high winds prevailing in the spring months; and all fruit trees, on account of these winds, should be pruned down and the branches kept as near the ground as possible. I have known trees grafted near the ground in April to grow seven feet in height by the fall of the leaf the same year, and the stem just above the graft bulb to increase from the ordinary size of an apple scion to one and one-half inches in diameter. All fruit trees are healthy in this valley if properly cared for, and yield enormously. The apricot and peach, blossoming so early in the season, are uncertain crops, but the other tree fruits of the temperate zone are almost sure. In the lower valley the fig and almond do well, and as far north as Valencia I have known fair crops to be raised.

### NURSERIES AND SHADE TREES.

Nurseries are needed in this portion of the valley, and no legitimate business would yield better financial results. In them should be raised for sale, not only fruit trees of all kinds, and shrubs, but also a good assortment of evergreen and deciduous trees for shade purposes. Though but few countries need shade trees more than New Mexico, scarcely any have less. Its chief reliance is the cottonwood, which, though a rapid grower, is not desirable near a residence at the season of the year when the inevitable caterpillar breeds in its branches. The ailantus does well, and I should suppose the catalpa and silver-leaved maple would also.

### THE FRUIT TREE BELT.

In this belt may be included, not only the valleys of the Rio Grande and Pecos, but also the higher lands on either side, and an extensive range to the north of this county. I remember that when the peach crop failed in the Rio Grande valley, (in 1869, I think,) the only peaches we got that year were from the Indian pueblo of Jemez, which has an altitude several thousand feet greater than Albuquerque, and is about forty miles further north. Most excellent apples are raised at Santa Fe, and could be, I have no doubt, in many of the valleys in the mountains to the east, west and north of us.

If, in the foregoing statement of facts and beliefs, I shall induce any one to inquire more deeply into subjects upon which I have merely touched, or shall have assisted in the slightest degree in making known to the "outside barbarians" something of this, to them, *terra incognita*, I am fully repaid.

### ADDENDUM.

The spring of 1882 was an exceptionable one in this part of New Mexico, February and March being extremely mild. The peach and other fruit buds of a like nature were forwarded so much that, in positions exposed to the cold wave and high winds of April, they suffered severely, so that there was a scarcity of these fruits. The grapes were slightly injured in some localities also, but the grape crop may be almost always made a sure one in this valley.

### ROOT–GRAFTING.

In the spring of 1881 I set out as an experiment, a number of apple root-grafts, placing the scions of the fruit desired in the roots of the native, acclimated apple. The young trees are thrifty, having done well from the start. I am satisfied that this plan will prove to be a good one, avoiding as it does the danger of breakage by winds, that those trees grafted above the ground are liable to at the point of intersection of the old and new woods. Of course this liability to breakage can be avoided in the manner previously suggested by me, but with root-grafting no staking is necessary. In the open country all orchards should be sheltered from the high winds by rapid-growing, deciduous trees. The Espalier system would be an excellent one for this country, were it not for its great expense.

## WHEAT-GROWING.

GEN. M. T. THOMAS.

Among the possibilities of a considerable portion of New Mexico is that of raising crops of grain and vegetables without the aid of artificial irrigation. In the upper portion of the valleys of the Puerco, east and west, through which the Atlantic & Pacific railroad runs, embracing a distance of about one hundred miles, both the temperature and soil are well adapted to the cultivation of wheat, oats, barley, rye, potatoes, beets, and many other vegetables. The soil is a light-red adobe with a strong alkaline deposit, containing all the nutriment required for the production of these articles.

This reduces it to a simple question of moisture, which it is admitted is a very serious one; yet any one who has carefully observed the conditions for the last year must admit that, had ground in this region been properly prepared in last September, and sown to wheat the last of that month or the first of October, there is no reason why a good crop should not have been raised without the aid of artificial watering. The natural rain and snow-fall have been amply sufficient to produce a good crop. Old settlers assert that the past year has been an exception in respect to the amount and distribution of the rain-fall, and this may to some extent be true; but is there not some reason to suppose that all future years may in effect be still more exceptional in that regard? Old settlers' opinions about things of which they have had personal experience, and with which their daily life renders them personally familiar, are usually honest and justly entitled to great respect; but in agriculture as well as in the mechanic arts the last twenty years has made great advances; discoveries and developments in that line have bordered on the marvelous. The alkaline plains of northern and western Dakota and the Red River of the North country less than twenty years ago were considered to be as nearly a desert land as this portion of New Mexico now appears to be, and yet those then desolate and apparently desert countries are to-day attracting the attention of the whole world for the immense and almost certain annual production of wheat.

Again, to come nearer home: In Wyoming there has been a very considerable production of wheat without irrigation for the last few years, and the production is constantly increasing. With these well-known facts as to what has been done in other parts of the country, and also the fact that rains and snows for the last year have not been unfrequent or unreasonable, except having an over-supply during the rainy season, which lasted from July to November, it is only reasonable to suppose that, with proper cultivation, the right kind of seed and a continuation of the conditions of earth, air and water, such as the last twelve months has experienced, good and paying crops will be produced.

To turn these great valleys, and the mesas adjoining them, into an agricultural region will not be the work of a day. Perhaps a great deal of experimenting must be done, and much money spent and many a disappointment met and endured, but the time will come when it will be accomplished.

Nature makes no mistakes, and while she was heaving this great ridge up out of the sea she might have overdone the thing a little, yet she will by the law of compensation regulate the matter so that this part of our desert land will yet furnish profitable and happy homes for civilized men.

The following upon the preceding subject, by Prof. N. S. Bivikov, having reference more particularly to western Bernalillo, will be read with interest:

Objections to the probability of a success in agricultural enterprise are made by some on account of the high altitude, the insufficient supply of water and the presence of too much alkalies in the soil. An impartial consideration of facts pertaining to these questions will show that at the highest points the temperature is sufficiently warm and the planting season long enough to allow the raising of certain crops. Taking advantage of the depressions in the ground, and thus making artificial ponds, sufficient water can be secured during the rainy season to supply crops with. By a judicious selection of the localities where to sink wells, water can be had in the valleys at a depth of from 40 to 75 feet. The alkaline constituents of the soil can be neutralized by the application of acid fertilizers or fresh stable manure, and converted into a valuable plant food. I suppose that, with proper management, the culture of wheat, rye, oats, barley, potatoes, beets, apples and raspberries will be successful; the more that the high price of these products in this part of the country will pay for the extra expenses and care. A series of experiments on a small scale would certainly prove the correctness of these views.

The combined efforts of brain, muscle, capital and the energy which has been already displayed in young New Mexico will undoubtedly soon transform this hitherto desert into a prosperous and flourishing country.

## MINES AND MINING.

Until within a very short time New Mexico has been comparatively unknown. The reason of this may be found in its isolation, by reason of not having railroad communication. Another reason was that it was inhabited by another race of people, who looked with disfavor upon strangers. No one had ever doubted the mineral wealth of New Mexico. Situated in the heart of the Rocky Mountains, it is the center of the great mineral belt that extends across our continent. Colorado to the north, and old Mexico to the south, have long been known as rich mineral sections. History informs us that, soon after the conquest of Old Mexico, the Spaniards pushed up into this Territory, conquered it, and worked on an extensive scale its mines and placers. Numerous ruins of smelters are found, giving indisputable evidence that mines were once worked on a large scale. The story of the Indian revolt of two hundred years ago, on account of enforced labor in the mines, is familiar to most readers, besides it is mentioned elsewhere and need not be enlarged upon in this connection.

During the early part of this century we hear of some of these old mines being opened and new ones being discovered, but they were never worked to any great extent. The Indians were hostile, transportation was expensive, and the methods of working ore very crude. It is only within a short period that the mines of New Mexico have begun to attract attention. Bernalillo county contains some of the most valuable of these Spanish mines. Several districts have already been opened, and work enough done to prove their richness. The greatest variety of minerals abounds within the limits of the county. Gold, silver, copper, lead, iron, coal and lime are found in large quantities. Granite and sandstone for building purposes are found in numerous places. Immense masses of crystalized gypsum are found in the southern part of the county. The value of this mineral as a fertilizer and for use in the arts is too well known to need explanation.

## COAL.

The coal measures were formed during the upper cretaceous and early eocene periods, and consequently consist wholly of lignite or brown coal. It is of a superior kind, and produces a great amount of heat. On the Rio Puerco, about twenty miles from Albuquerque, several veins have been opened which vary from four to eight feet in width. In Tijeras Cañon, coal of an excellent quality has been discovered, and in sufficient quantities to make it practicable to mine it with profit. But the principal coal field is in the western part of the county, and on the line of the Atlantic & Pacific railroad. The following upon this portion of the coal fields of Bernalillo county is from the pen of Prof. Bivikov:

"My investigations having been limited to the Atlantic & Pacific railroad, principally between Bluewater (Agua Azul) and the western boundary of New Mexico, I express an opinion only in regard to the southern part of Bernalillo county. From the character of the various rocks cropping out along this line, and some fossil shells, corals, etc., found in them, I come to the conclusion that these rocks belong to the triassic and oolitic (jurassic) geological system, with extensive areas of alluvial soil, and occasionally lava and other rocks of volcanic origin. The economic products are gypsum, limestone, building stone, lithographic blocks, fire-clay, coal, bitumen, copper and probably rock salt.

"The principal value of the lands, I mean those nearest to the railroad, between Bluewater and Cranes (Coolidge,) is or will be agricultural. Near this last place the red mesas (elevated table land) border the railroad on the northern side. These mesas contain deposits of dolomitic marble (magnesian limestone), gypsum, sandstone good for building purposes, and thin seams of coal. A few miles south of Cranes, in Valencia county, are found valuable deposits of limestone, cement rock and copper.

"The character of the rocks remains unchanged until about seven miles west of Wingate Station. The red mesas disappear, a white sandstone with layers of grayish and yellowish, ferruginous sandstone takes their place; one mile west of this point, near the Campbell's Pass, begin the coal fields."

About ten miles northeast of the railroad lies a very interesting locality, which, when fully developed, will certainly be of great value. The wagon road leading to it runs through a fertile valley bordered by rocky mesas; after a ride of about eight miles you come to a place most inviting for a town site; from the middle of the valley rise three or four low hills with plenty of building stone and timber around, and some springs of good water in the vicinity. Two miles further the rugged hills and sharply defined little valleys bear evidence of disturbance and misplacement of the rocks.

### BITUMEN.

Here, out of crevices in sandstone, which is from 30 to 75 feet thick, flows, in six or seven different spots, bitumen (mountain pitch); an extensive area below these points is covered with indurated bitumen from two to four inches thick; large boulders of the same material, mixed with sand, gravel and fragments of rock, are scattered all around, for a great distance. Thin seams of coal, shale, ironstone, and some indications of coal oil, are met with in many places.

From the Campbell's Pass almost to the line of Arizona, near Manuelito station, for a distance of at least fifteen miles, numerous seams of coal make their appearance on both sides of the Atlantic & Pacific railroad. The coal is of a very good quality, containing from 92 to 95 per cent. of combustible matter. Coal banks have been opened and are worked all along the line, supplying the railroads, iron works, machine shops, etc., as far east as Albuquerque, and as far west as the San Francisco mountains in Arizona, a distance of more than 300 miles.

The seams of coal average from four to six feet, gaining in thickness to the northward, so that in some places they reach ten, even fifteen feet in thickness. Mining on a large scale is done by the Pacific Coal Company, the Defiance Company, and others near the track of the Atlantic & Pacific railroad.

### THE PRECIOUS METALS

are found in various parts of the county. North of Albuquerque, in the district known as "New Placers," richer placer "diggings" have been discovered, and when proper facilities can be arranged for obtaining a sufficient water supply for washing the rich sand, this district will furnish profitable employment to thousands of men, The Sandia Mountains, one of the largest ranges in this part of the Territory, are fifteen miles due east of Albuquerque, and are known to be rich in gold and silver. But little prospecting was ever done by Americans in this range till 1882, but since that time numerous valuable discoveries of both gold and silver have been made, and other rich "finds" are reported nearly every day; there is every indication now that some of the most valuable and extensive mining interests in New Mexico will be developed in this range during the next few years.

### COPPER

appears to be more abundant in Bernalillo county than in any other part of the West, and just as soon as the necessary development work can be done, and the proper machinery put up, some of the copper mines of this county will be entitled to take rank among the richest in the world. A writer in the *Albuquerque Journal*, in describing the copper fields in the vicinity of Copper City, in this county, speaks as follows in regard to the immense wealth of Eureka Mountain:

"Facts and figures are always more substantial than reports of big strikes merely. It was stated before that the strength of the copper vein between the white and red sandstones raised from twenty to thirty feet. Now arises the question, How many tons of copper ore can be taken out of this vast body? As we have seen, the Eureka Mountain itself comprises thirty-five claims, of which thirty-two are of full size, and three 400 feet in width only. The total area would be 32x600x1500, 28,800,000 square feet, and 3x400x1500, equal to 1,800,000 square feet; total, 30,600,000 square feet. As several of the claims extend a little beyond the copper contact, we deduct for this short-coming, say, 100,000 square feet, leaving an area of 30,500,000 of square feet. Now, the contact appears through the whole mountain in a thickness of from twenty to thirty feet; we take the lesser figure, and from this again deduct fifty per cent. for pillars, and ore of less than ten per cent. of metal, leaving to account for a ten-foot vein. Multiplying this with the area of 30,500,000 square feet, we have 305,000,000 cubic feet of smelting ore. Next, one cubic foot of this ore weighs 250 to 260 pounds; we will take only 200 pounds per cubic foot, and the aggregate weight of the mass will be 305x200, equal to 61,000,000,000 of pounds, or in tons at 2,000 pounds each, 30,500,000, or 30½ millions of tons of

SMELTING ORE.

"In addition to this there will be the same amount of low grade ore to be reduced by the 'leaching process.' All further estimates are based on the smelting of ore only. It must be remarked that the average of ten per cent. is the lowest possible grade taken into consideration as smelting ore, and it will prove that at this standard the smelting ore throughout the contact will average thirteen to fourteen per cent. of copper. We will assume an average product of ten per cent. only, and that will give us 2,000 pounds at ten per cent., equal to 200 pounds of pure metallic copper. It requiring ten tons of ten per cent. ore to produce one ton of copper, we have as the result of the whole 30½ millions of tons of ore, divided by ten, which is equal to 3,050,000 tons of copper metal."

The foregoing facts will serve to give the reader an idea of the great mineral wealth of some portions of Bernalillo county, and when, in connection with this, he remembers that the work of prospecting has but just commenced, he may form some estimate of the great mineral interests that will be developed here in the near future, under the stimulus of American enterprise and American capital.

# COLFAX COUNTY.

BY T. W. COLLIER, COMMISSIONER.

The extreme northeastern county of the Territory is peculiarly adapted to cattle, and capitalists are rapidly availing themselves of its advantages. The splendid shelter of its mountains, its inexhaustible springs, and magnificent streams, have made it one of the most prosperous cattle-growing counties in the Territory. Agriculture, although in its infancy, is in a flourishing condition. The many canons winding through the mountains are being utilized in growing grain and vegetables. Along the Vermejo creek fruit raising is becoming a profitable industry.

## SPRINGER.

Springer, the county seat, is a prosperous town, with a fine court house, good schools, and an extensive cement manufactory, procuring the materials for its manufacture in the vicinity.

## RATON.

Raton, the leading town, is beautifully located at the southern base of the Raton Mountains. It is the end of a division of the A. T. & S. F. railroad, with large machine shop, round-house, and all the necessary buildings for working several hundred men. A $25,000 school house, opera house, and a number of business houses and private residences are in process of construction. It has two daily and two weekly newspapers. It is a growing town, controlling trade from a large scope of country.

## MINERAL PRODUCTS.

Of the mineral productions of this county, we have gold, silver, copper, lead, iron, manganese, plumbago, fire-clay and coal. The gold mines are situated in the Moreno Valley, and at the head of Ute creek, on the Ponil, and on the Cimarroncito. The most important mines in the Moreno are placers. These were discovered in 1868, and have been worked continuously ever since. This district includes many rich gulches, of which the following are the most important: Willow, Humbug, Grouse, Michigan and Big Nigger. These have all been worked by hydraulics with great success. There is on the bars between the gulches, and in the valley of the Moreno, a vast area of land which has not been worked, all of which prospects fully fifty cents to the cubic yard. Numerous lodes of gold quartz have been discovered in this district, but few developed to any great extent. The water for working the placers is brought principally by a large ditch from the head of a neighboring stream in the Culebra range. On Ute creek there are also rich placers, which have been worked since 1869. But the principal mines in the Ute Creek district, which is divided from the Moreno by the Baldy range of mountains, are the quartz lodes. Chief of these is the Aztec, which was discovered in 1869, and worked the following year with a yield of some six or seven hundred thousand dollars. It is a good vein of free-milling ore. There are a number of other lodes which have been worked for years past, and some recent discoveries which promise well. Principal among the latter are the Rebel Chief, Mountain Queen, and discoveries at the head of the Ponil and on the Cimarroncito. The two former are gold quartz. On Ponil the ores run fifty per cent. in copper, and high in silver and gold; they are veins about three feet thick, and are regarded as important discoveries. On the Cimarroncito a number of gold lodes have been discovered, and it seems more than likely that this may prove an important district. There is a fifteen-stamp mill at the head of the Ponil, owned by the New Mexico and Rhode Island Mining Company. The aggregate yield of gold in this county, since the discovery in 1868, is variously estimated between two and three million dollars. Mining here is regarded as but in its infancy, and there is every confidence that the future annual yield will greatly exceed the past.

### COAL.

Colfax county is unlimited in its wealth of bituminous coal. But little has been done in developing its mines, except in the vicinity of Raton, where the Raton Coal and Coke Company transacts an immense business in shipping coal and supplying the railroad company. This company has also in successful operation a large number of coke ovens. The coal mined here ranks with the best qualities mined in Pennsylvania.

In wealth, enterprise and hospitality, Colfax county occupies a high position. Its climate is unsurpassed, and as a health resort its invigorating altitude attracts considerable attention and favorable comment.

# DONA ANA COUNTY.

COMPILED FROM THE REPORT OF COL. A. J. FOUNTAIN, COMMISSIONER.

A strip of table land, four thousand feet above the sea level, some one hundred and fifty miles long, from east to west, and one hundred miles wide from north to south, lying in the southern central portion of the Territory of New Mexico, forms the county of Dona Ana. It embraces the greater part of that portion of New Mexico acquired from the republic of Mexico by the Gadsden treaty of 1853. Within this portion lies the famed "Mesilla Valley," which, ere many years elapse, will be noted as the garden of the continent.

This vast tract of table land is traversed from north to south by the Rio Grande del Norte, which has washed out a valley something over five miles in width, sinking over two hundred feet below the level of the plain. This valley has, within Dona Ana county, some three hundred square miles of alluvial soil, unsurpassed in richness, which, when irrigated by the turbid waters of the Rio Grande, which meanders through its center, produces enormous crops of all cereals, and all kinds of fruit adapted to a temperate climate. This valley furnishes homes for nearly, or quite, eight thousand of the population of the county. From fifteen hundred to two thousand more reside in the mountains and on the plains, engaged in agricultural pursuits, stock-raising and mining.

Great mountain ranges spring up from the plain, to a height of from two to six thousand feet above its level. These ranges are from twenty to fifty miles long, and seldom exceed ten miles in width. Their general course is from north to south, and they are all rich in mineral.

Between these ranges are great plains, from twenty to sixty miles wide, treeless and almost waterless, but covered with a growth of rich, nutritious grass, that affords pasturage for stock at all seasons of the year.

Beyond the valley of the Rio Grande, but a small portion of the land in the county is susceptible of producing agricultural crops, owing to the scarcity of water, artificial irrigation being absolutely essential in this climate for the production of crops.

## AGRICULTURE, HORTICULTURE AND GRAPE CULTURE.

That portion of the county included in the valley of the Rio Grande is unequalled for fruit growing by any other portion of the Union. Apples, peaches, pears, plums, apricots, quinces, and indeed, all fruits adapted to a southern, temperate climate, grow in profusion, and to perfection. Grape culture is the great specialty. A vineyard that has reached the age of three years and upwards will produce 16,000 pounds of grapes, equal to 800 gallons of wine, to the acre. From seven hundred to eight hundred vines are set out to the acre. They are planted in rows from six to seven feet apart, are pruned to the stump each spring, and the vine is usually covered with earth, or mulched, during the winter. A vine will produce from twenty to thirty pounds of grapes, according to its age. Small fruits, especially strawberries, do as well here as anywhere else, and better than in most places.

With proper cultivation, forty bushels of wheat or eighty bushels of corn can be made to the acre. It is not unusual to sow wheat in the winter, harvest the crop in June, and then plant the same land in corn, which is harvested in October or November of the same year.

Fertilizers are but seldom used, as each irrigation leaves a slimy deposit on the land, which renews the soil, and is, in fact, the best fertilizer that could be used.

Each town or settlement has its own irrigating ditch or canal, which is the property of the community. All persons owning or holding lands that can be watered by the ditch are required by law to contribute their *pro rata* of labor to keep the canal in proper working order, and they are entitled to the use of the water, subject to the regulations adopted by the community, in conformity with the Territorial laws.

Nothing strikes the new comer to the Mesilla Valley more forcibly or agreeably than its perfect adaptability to fruit raising, and the advantages offered by a climate where fruit trees can be kept growing for nine months in the year. The first orchards of improved varieties of apples and pears were planted in 1867, in Mesilla. Root grafts were procured through the mails, and they proved very thrifty, and commenced bearing the fourth year. The trees are now quite large and healthy, and produce enormously *every year.* The diseases to which fruit trees are liable in the Eastern States are here absolutely unknown. The preparation and exportation of dried fruits of all kinds is destined to become one of the most important industries of the Mesilla Valley.

MOSS ENG. CO. N.Y.
H.T. BROWN PHOTO SANTA FE

VINEYARD, MESILLA VALLEY.

The principal variety of grape grown in the Mesilla Valley is the "Mission" grape; it was probably introduced by the Spanish missionary priests, between two and three centuries ago. It is very sweet, has little acid or astringency, and is entirely devoid of the "foxy" taste found in Eastern grapes. It is very fruitful, and has an abundance of juice. The wine made from this grape is of considerable alcoholic strength, and is made pure and simple, without adulteration of any kind. Many persons when they first use the Mesilla Valley wine, believe that it has been artificially sweetened. This is owing to the fact that so much sugar is contained in the grape that, after reaching the maximum alcoholic strength attainable by fermentation, the wine still retains a very perceptible amount of unchanged sugar.

Brandy making has not been neglected. A very high quality of brandy, said by experts to be fully equal to the best imported French brandy, is being manufactured from the lees of the wine after it has been racked off. Peach and apple brandy, of a very superior quality, is manufactured at Mesilla.

### ONION CULTURE.

The native onion is justly famous for its size, beauty, and mild flavor. These onions will average from nine to eighteen inches in circumference, weighing from one to three pounds. Thirty thousand onions can be produced to the acre, averaging over one pound each. The writer has had the benefit of a large experience on this subject, and can say, from actual experiment, that with careful cultivation 50,000 pounds of onions can be produced to the acre, *as a rule*. These onions far surpass the famed Bermuda onion in every respect; they are larger, better flavored, milder, and better shaped, and would command a much higher price in the Eastern markets. They can be marketed on the ground where raised at *three cents per pound*. Every acre of land in the Mesilla Valley, under cultivation, can be made to produce at least three thousand dollars annually, if planted in onions, and well cared for. An acre of onions will require the exclusive labor of one man for six months in the year. Four men could attend to ten acres, including the preparation of the beds and work on the irrigating canals.

With the exception of the Irish potato, all kinds of vegetables grow to perfection, and can be raised at all seasons of the year. Sweet potatoes, tomatoes, cabbage, turnips, beets, pumpkins, peanuts, etc., etc., do as well here, and are as sure crops, as in any other locality.

### ALFALFA.

Undoubtedly the most valuable of forage crops adapted to the climate of the Mesilla Valley is the alfalfa, a variety of Lucerne. Stock not only eat it with avidity, but thrive and fatten upon it. It attains a height of from twenty-four to thirty inches, and *five cuts of forage*, aggregating something like eighteen to twenty tons of hay per acre, have frequently been made in a season. It is difficult to overestimate the importance of alfalfa to agriculture in this valley. It is the most available green forage during summer, and as an adjunct to dairy and stock farming is invaluable.

There is no such thing as a dairy farm in Dona Ana county. This is very remarkable, when we consider that fresh butter of fair quality can always find a ready market at sixty cents per pound, Eastern butter of a poor quality sells for fifty cents, and forty acres of alfalfa would be sufficient to keep forty good cows. I know of no investment that would, if judiciously managed, prove more remunerative, for the amount of capital invested, than a small dairy and poultry farm in this valley. Eggs sell at from thirty cents per dozen in the spring and summer, to fifty cents in the fall and winter. Fowls cannot often be bought at less than seventy-five cents. There are no special difficulties to be overcome in dairy farming or poultry raising in the Mesilla Valley.

Agriculture is a new industry, one that has been recently introduced in this valley. The experiment made has satisfactorily demonstrated that it will soon demand a place as one of the important industries of Dona Ana county. The imported bees take kindly to the climate and food. The *artemisia*, mesquit, and other wild plants, afford unlimited pasture through three-fourths of the year. Alfalfa, when in blossom, from May to September, affords the best of pasturage, not only for stock and swine, but for the honey-bee.

### CANAIGRE.

On the great table lands of Dona Ana county, and in the innumerable canons leading from the table lands to river bottoms, there grows spontaneously and in profusion a plant known as the "canaigre." The top has some resemblance to a beet top, the root resembles a sweet potato, is six to eighteen inches long; each plant has from three to six pounds of root. This root contains 23.45 per cent. of rheo-tannic acid, and is very valuable for its tannin. The Commissioner of Agriculture, in his report for 1878, speaking of this plant, says:

"The examination of the canaigre, for tannin, shows the existence of a very abundant source of this important material, and gives reason for the belief that the latter at least may soon afford a cheap supply to the arts. Thus far only a preliminary examination has been made, but the investigation is being continued, and will, it is hoped, have reached definite conclusions before the publication of the annual report, of which this will be a part. The importance of a new and cheap source from which tannin may be readily attained can scarcely be overestimated, and the most diligent prosecution of this search in various directions will be continued until success is assured. The amount of barks and other substances, valued for their tannin, reaches many millions of dollars yearly, and if the canaigre root answers our expectations, the world's supply may be easily grown by our own people."

Subsequently an analysis of the canaigre root was made by the chemist of the Bureau of Agriculture, with the following result:

### EXAMINATIONS FOR TANNIC ACID—ANALYSIS OF CANAIGRE ROOT

The roots are from four to six or eight inches long by about one inch in diameter, deeply corrugated, of a dark brown color externally, a deep red-brown color internally, and of a peculiar odor like madder. In fine powder it is of a light red-brown color.

The fresh roots received from the same locality were smooth in outline, and much resembled sweet potatoes in form, but were dark brown in color. In transverse section they were of a bright lemon-yellow color, which rapidly changed to red-brown by exposure to the air. They lost water very rapidly, becoming shrivelled like the roots previously received.

Both the fresh and dry roots have a very astringent taste. In the fresh root, containing 68.07 per cent. of moisture, the tannin equalled 8.51 per cent., or 26.62 per cent. when calculated to water-free substance.

The air-dry roots, containing 11.17 per cent. of moisture, contain 23.45 per cent. of tannic acid, equivalent to 26.30 per cent. of tannin in strictly dry root. From the close agreement in the tannin estimations in the fresh and dry roots, it would seem as if the tannin was not affected by long keeping.

This tannic acid is of the variety known as rheo-tannic acid, and is identical with that existing in rhubarb. In many respects canaigre root resembled rhubarb, and the following analysis has been made with a view to determine, if possible, the value of canaigre root either as a tanning material or as a medicinal substance.

The following are the percentages extracted by solvents from the air-dry root, which contained 11.17 per cent. of moisture:

| | |
|---|---|
| Cold water | 41.48 |
| Alcohol, 98 per cent | 44.01 |
| Alcohol, 85 per cent | 48.19 |
| Petroleum ether | .90 |
| Chloroform | .92 |
| Carbon disulphide | .96 |

Ether extracts vary in amounts according to the time it is allowed to act. It will be observed that petroleum ether, chloroform, and carbon disulphide extract nearly the same amounts. The extract thus obtained was a yellow, soft-solid substance, freely soluble in alcohol, ether, benzole, carbon disulphide, and chloroform; insoluble in water. Its solutions have a faintly acid reaction. It is soluble, in greater part, in alkaline hydrates, with a beautiful pink to carmine color. Its faintly alkaline, ammoniacal solution precipitates acetate of lead pink, and reduces potassium permanganate in the cold, and apparently reduces silver nitrate. This substance has been called *yellow resin* in this analysis, although it may contain traces of oil, chrysophanic acid, and emodin (Quar. Jour. Ch. Soc., x, 300). Alcohol extracts the above *yellow resin* and a red-brown substance in some particulars resembling the *erythroretin* of Schlossberger and Dopping (Ann. Ch. Pharm. *l*, 219).

[*Note.*—Further consideration of the properties of canaigre will be found elsewhere, under Bernalillo county.]

Whether this root is valuable either for tanning purposes or for medicinal use must be determined by actual experimentation. The result of the analysis fails to show the presence of any substances that would prove injurious to leather, and the large proportion of tannic acid is certainly a favorable indication. In many particulars this root resembles rhubarb, and it seems probable that it may be used to advantage in place of rhubarb, where a more astringent medicine is indicated.

BOUQUET, SOUTHERN NEW MEXICO.

The rapid change of the fresh root from yellow to brown may be due to the change of yellow resin into the less soluble red-brown substances.

The result of a long experience in the use of canaigre for tanning purposes by our native tanners has been to remove all doubt as to the great value of this root in the manufacture of leather. That it contains nothing injurious to the leather has been demonstrated by long use. Its great abundance, the facility with which it can be gathered, and its value as "a new and cheap source from which tannin may be readily obtained," will all contribute to make its gathering, shipment, and perhaps its culture, a new and important industry in Dona Ana county.

## GYPSUM.

On the great plains lying east of the Organ and San Andreas ranges of mountains is a deposit of crude, *pulverized* gypsum. The deposit is about forty miles long and thirty miles wide. The powdered gypsum resembles huge snow drifts from twenty to fifty feet in height. A shovel full of this gypsum when held over the camp fire for a few minutes becomes pure *plaster paris.* The projected railroad from El Paso, Texas, to White Oaks, will, when completed, pass in close proximity to these gypsum beds, and afford a means for shipping this valuable fertilizer to the wheat fields of the east.

There are but four land grants in Dona Ana county. One of these is a private grant of three leagues which has been confirmed by Congress. The others are colony grants, with well defined limits.

Agricultural land of the best quality, suitable for fruit and wine raising, can be purchased at from five to ten dollars per acre, with good title. An acre of land containing eight hundred bearing vines is worth one thousand dollars.

If properly cultivated and cared for, the produce of a single acre should sell each year for—

| | |
|---|---|
| If grapes | $800 00 |
| If fruit, such as apples, peaches, pears, etc | 500 00 |
| If small fruit, such as strawberries, etc | 1,000 00 |
| If onions | 1,000 00 |

## SUN-DRIED BRICK.

The adobe, or sun-dried brick, is the material usually employed for building purposes, long experience having proven that it is the best, most durable, comfortable and economical in this climate. The bricks are made of the alluvial soil of the valley, which is simply mixed with water to the consistency of thick mud. Chopped straw is mixed in, and the bricks are moulded in wooden frames, twenty-two inches long, eleven inches wide and three inches deep, and are then left to dry in the sun. Four men should make and mould one thousand adobes per day. They can be bought for eight dollars per thousand, and for an additional eight dollars laid up in the wall. They are laid up with the same mud of which the adobe is made. A properly laid adobe wall, when plastered inside and out, should be twenty-four inches thick. These walls are impervious to heat or cold, and hence make the most comfortable dwelling house for this climate. A comfortable adobe house with two rooms and a kitchen, roofed, with doors and windows, can be built for $500.

The native Spanish-speaking portion of the population of Dona Ana county, comprising five-sixths of the whole, have a kindly feeling for immigrants who come and settle and live among them, so long as they behave themselves. The stranger who appears to be an honest man, and to come for an honest purpose, is received with warm-hearted, open-handed hospitality.

## PASTORAL.

The following, while true of Dona Ana county, is likewise true of the entire Territory:

The vast plains and extensive mountain ranges of Dona Ana county are covered with a species of grass known as "gramma," which grows in bunches, more or less thick, according to the locality, but it is always found sufficiently abundant to furnish stock with the most nutritious food at all seasons of the year. It does not flourish on damp or clay soil, and hence it is not found in the river bottoms. It thrives best in sand and gravel and is found in perfection on the dry, sandy plains and rocky hill slopes. Horses, cattle and sheep live and thrive upon this excellent grass without other feed; flowerless and seedless, it covers the broad plains and clothes the mountain sides with withered looking bunches that seem to combine the qualities of grain and the best of hay in the greatest perfection.

Good gramma hay can be cut *any day in the year.* The best season for cutting, however, is in the months of September, October and November, or at any time after the summer rains are over and before the first frost. With thousands of square miles covered with such grasses, with a climate that permits stock to run at large unsheltered every day in the year, Dona Ana county necessarily counts stock raising among the most important and most lucrative industries. Scarcity of water on the plains is a drawback, but one that can be easily overcome. The railroad companies who have laid over two hundred and fifty miles of track in Dona Ana county have never failed to find water on the plains wherever they have bored or dug for it. Persons intending to take up stock ranches will have the benefit of this experience. Intelligent stock men assert that the profits on cattle and sheep raising will average fifty per cent. annually on the amount invested, and that the average loss will not reach two per cent. *No kind of stock is ever required to be winter-fed or sheltered.*

The method of stock raising in Dona Ana county is purely pastoral. The meat cattle roam at large over the plains, the brand being the only method by which the owner can identify his property. When not kept "close herded," cattle wll frequently wander a hundred miles from the owners' ranche. Periodical "round-ups" are made, on which occasions the young calves are branded and marked with the same mark and brand that the mother has. Sheep are allowed to roam from one watering place to another in charge of a shepherd and his dog, never being placed under shelter except on rare occasions, when it becomes necessary to handle them. The common sheep of the country is far from being a high-bred animal, yet the stock has been found profitable in cases where improved stock has failed to pay.

## MINES.

The mining industries of Dona Ana county have recently assumed an importance that dwarfs all others. It has been known for many years that valuable mineral deposits were contained in all of its mountain ranges, but their extent and richness was not until recently suspected.

### THE ORGANS.

The Organ Mountains lie about eighteen miles east of the Rio Grande. The district at present is ahead of any in the county, in the amount of development work and prospecting being done. All that is now needed to place the various mines on a paying basis is a couple of smelters, and it is very probable that they will be erected within a few months.

The principal composition of the mountain mass in sight at the different elevations, and as shown by the line of breakage discernible at points varying in distances, is syenite doloritic (limestone proper), and is combined with other minerals, sandstone, arbolite and porphyry, with now and then talc, porphyry and quartz, in mass, and in several places it bears evidence of having undergone a roasting, the residuum filling the surrounding cavities. Again, the usual combination of quartz and feldspar, that in different localities are more or less mineralized, from the cap rock of the clearly defined veins that ramify the mountain mass, extending from the summit to the plain, on either side of the mountain, within the mineral belt range proper; for such these mountains have, for a distance of at least twenty miles long and six wide, counting from summit to each side of the mountain plain.

These mountains have a coal formation in the upper cap of the wavelet before named, that can be tapped several times in three miles, and then has its incline under the plain.

The following are among the best known properties in the range on which work is now being steadily prosecuted:

The *Hawkeye* has a shaft down about thirty feet, and shows white quartz with antimonial silver, galena, and sulphurets of iron. It has a vein of about two and one-half feet in width, following the lead, with a black wall of syenite. The ore is said to assay from $100 to $350 in silver.

The *Memphis* is in lime formation. The main shaft, No. 1, at this examination is one hundred feet deep. It has a cross-cut of fifty-three feet, running west, eighteen feet all in ore. At the 100-feet level a cross-cut is being run; one is now in thirty-four feet. The ore vein on the west side of the wall is perfect, pitching five inches to the foot. On the east of the wall it is all in ore, and its quantity is unknown. The mine is not yet in shape that a computation can be made. The character of the ore is very flattering for developing into a good, paying mine. The ore of this mine is copper-stain carbonates and galena, carrying silver. It is said that assays have been made of this ore varying from $40 to $200.

The *Modoc*, and the south extension of the same lode, called the *Lebanon*, are claims which show up good ore bodies, consisting in part of galena, carrying silver, copper, and a little gold. The *Modoc* has a tunnel projected sixty feet in the mountain mass, which is now thirty feet from the summit, with contact well defined, and has every appearance of developing into a good mine.

The *Stevenson* mine is an old one, but at this time no work is being done upon it. As an evidence of its early use, in the long ages past, not far from the *Modoc*, and to the southeast, is an old ruin, with walls about two feet high, showing that at least a four-room house had an existence, and near this are the remains of an old smelting furnace, and around it is found a quantity of antimonial silver. Nothing like it has yet been found in these mountains, so the inevitable conclusion follows that the source of this mineral is undiscovered, if in these mountains, or else the ore was imported from some far-off district, yet unknown.

The *Merrimac* is situated one mile and one-half north of the *Hawkeye*, and three-fourths of a mile east of the *Sylvia*. It is said to be one of the best leads in the district, and is claimed to carry sixty per cent. of copper and sixty-six ounces of silver. It has a fissure vein, with syenite walls on one side, and limestone on the other, and has an eight-feet development shaft. The matrix has in it iron, silver, oxide of copper, and galena.

The *Black Hawk*, on the northern part of the mountains, is an incline shaft of about forty-five feet, following the vein dipping to the northeast in a fissure, mineralized all the way. The shaft is five by six, copper indications. They claim to have an assay of two ounces gold, $50 silver, and two per cent. copper, *i. e.*, $100 of the copper per ton.

On the south end of Mineral Hill, on the east side of the mountains, and about eight miles north of Shedd's ranch, are a series of claims called the *Uranus*, *Vulcan*, *Lady Hopkins* and *Pocotiempo*. All these claims have a heavy iron capping, and carry both gold and silver. There are now several shafts in about ten feet, but preparations are being made to run a 300-feet tunnel to bisect and cut the several veins that cross the mountain, and also through the several claims.

It will not be very long before capitalists will be directing their attention to these mountains, and with one or two good mills in operation, Las Cruces and Mesilla will become thriving places.

## THE JARILLAS.

The Jarillas Mountains, now known as the Silver Hills District, are about twenty miles east of Shedd's ranch, which is on the eastern slope of the Organ range. They are about twelve miles in length, from north to south, and present every appearance of being a volcanic upheaval in the midst of the arid plain, some sixty miles wide, which lies between the Organ and the Sacramento ranges.

The Silver Hills have sprung into fame only since the first of January last, though they have long been known to be rich in mineral, and many attempts have been made to prospect and develop them, but owing to the want of water, which had to be carried from Shedd's ranch, every effort proved futile.

At length a band of daring prospectors invaded this hitherto inaccessible region, and succeeded in surmounting its difficulties.

The lodes generally extend northwest and southeast. At the south end the capping is mostly iron, in some of its numerous forms. These cappings are gold and silver-bearing, but most of the miners think that as soon as the cap-rock is removed, the principal yield will be gold. This supposition seems to be well grounded, as placer gold is found in nearly all the gulches. Some silicious lime is also found in the south. As you pass to the north, the iron capping gives way to that of silicious lime, and the prospect for gold decreases, while that for silver and copper increases. But while this rule holds good in the main, like other rules, it has exceptions. So we are not surprised to learn that some claims at the south run high in silver and copper.

Several claims have been sold, without development, for $500 each, while others have been bonded at $20,000. Interests have also been sold in some claims at good figures, where the locators were too sanguine to sell outright, but not rich enough to develop alone.

All the ore is impregnated, to a greater or less degree, with copper in its various forms, and yields well in gold and silver. We have had reports of assays running as high as seventy-six per cent. in copper, and from fifteen to seventy-nine ounces in silver. Of gold we have no specific report, but as before intimated, the prospect is very good. It is said that from four pounds of ore from the *Refuña* mine, smelted in the rudest manner, two ounces of silver were obtained.

A well has been sunk to a depth of ninety feet in Dogtown, about five miles west of Jarillas, at the bottom of which is a bed of sand and red clay sufficiently wet to squeeze water from it with the hand. If this bed be perforated, and sand and gravel found below, water will undoubtedly follow, and probably rise almost to the surface. If so, we predict for the Jarillas a boom such as has not been known since the palmy days of Leadville.

Mining in the Jarillas, prior to the recollection of the oldest visitants, and indeed prior to any well authenticated history of this country, has left its traces in numerous dumps of rejected ore, evidently considered worthless in comparison with that which was probably packed long distances for reduction by the rude methods then known, but which will yield a handsome profit under present modes of treatment and advantages of transportation. The old shafts, or more properly "gangways," from which the ore has been carried on the backs of peons, have yielded to the mouldering influences of time, and the work of denudation which has been going on for decades, perhaps centuries, has filled them up and almost obliterated from them every trace of human industry. Even the old ore piles were covered with wash from the mountains above, so that they were only found by mere accident. At other places, great excavations have been made for that highly-prized and valuable gem, the turquoise, and judging from the numerous small specimens found in the old *debris*, not without success, but as civilization advances, the demand for, and hence the value of, mere ornaments decreases, so that it is not likely that it will ever pay again to work these deposits for turquoise.

Some speculative minds believe the traces of ancient mining have been thus obliterated by the Pueblo Indians, to keep their Spanish conquerors from using their enforced labor to enrich themselves, while others deem it of more recent date, and claim that they were concealed by the Mexicans, about the time of the cession of New Mexico to the United States. But for ourselves, we prefer to attribute the obliteration to natural causes.

### THE PORTRILLAS.

This is a small range of mountains near the Mexican line, about thirty-five miles southwest of Mesilla. Many valuable mines have already been discovered in this range.

### THE SAN ANDREAS AND SAN NICHOLAS MOUNTAINS.

These mountain ranges offer a fine field for the prospector. They are the northern extension of the Organ range, and are known to be rich in valuable minerals. The mines of Dona Ana county have not yet been fairly prospected. I have myself, with a horn spoon and a canteen of water, washed gold out of the sand in a dozen canons of the Jarillas Mountains, and I am informed by reliable gentlemen that they have done the same in San Andreas range, yet I know of no placer claim having been located in either of these ranges.

The prospector in Dona Ana county need have no apprehension that his mineral discoveries may turn out to be within the limits of somebody's land grant, *for not a foot of mineral land in this county is covered by a grant.*

### TAXES.

Dona Ana county has no bonded debt. There are some $3,000 to $4,000 of outstanding unpaid county warrants. The financial condition of the county, however, is good. The amount of taxable property is increasing daily, and if no unnecessary debt be created, county warrants will shortly be worth their face value.

### RAILROADS.

There are within the limits of Dona Ana county something over 250 miles of railroad constructed and in operation. The Atchison, Topeka & Santa Fe railroad enters the county from the north, and running south via Rincon, passes through the entire length of the Mesilla Valley, to El Paso, Texas. From Rincon it branches west to Deming, where connection is made with the Southern Pacific railroad. The latter road, coming from the Pacific, passes Deming, thence traversing the county from its western limit to the Rio Grande, it enters the State of Texas about four miles north of El Paso. Immigrants from the Southern and Southwestern States can reach Dona Ana county by either the Texas & Pacific railroad, or the "Sunset Route," from San Antonio, Texas, to El Paso, thence via the A. T. & S. F. to Las Cruces, Mesilla, or other business centers. Travelers from the north and west can come by the A. T. & S. F. railroad; and by the Southern Pacific railroad, from the Pacific Coast.

### A SUMMARY FOR THE INDUSTRIOUS AND THRIFTY.

Honest, industrious and thrifty immigrants are needed in Dona Ana county; men who know how, and who are not afraid or ashamed to work, will find an inviting field and a warm welcome here. Any intelligent, industrious and thrifty man, with a small capital, can here soon make himself a comfortable home, earn a comfortable living for himself and family, and, by the exercise of thrift and frugality, become independent if not wealthy. There are many industries for him to take hold of. If the exciting and uncertain life of a miner does not tempt him, he can turn his attention to farming, onion growing, fruit raising, dairying, stock raising; he can cut, bale and ship gramma hay; he can buy ten acres of land for $100, plant it in vines and fruit trees, and in four years his labor will make it produce him from $500 to $1,000 to the acre; he will never find the ground frozen so hard in winter that he cannot break it with a two-horse plow; he will never find the weather so cold that he cannot work in the open air in his shirt sleeves without suffering severely; he will never find the heat so excessive in summer as to prevent his working with safety from sunstroke in the open field; he will not be required to work six months to lay up forage to feed his stock the other six, but when winter comes on, and his crops are in, he can turn his cattle loose, and they will shift for themselves, or he can yoke them up, take his wagon, and cut and haul a load of good hay on the plains within a dozen miles of the valley, on any day between the 1st of January and the 31st of December.

When he harvests his corn in October or November, he can commence the next day, if he likes, and plow up the same land for his spring wheat, and he can sow that wheat on any day between November and March, and harvest it in June. In June, July and August he would expect occasional showers, but during the other nine months it would surprise him very much to see rain fall or snow cover the ground. Thriftless, shiftless, lazy people have no business here. They are not needed, and the country would not suit them. Dona Ana county has a very fair supply of business and professional men. It is said that for lawyers and doctors there is always room *on top of the ladder*. Professional gentlemen will be warmly and kindly received by their professional brethren here, but they will discover that if they are not prepared to take their place *at the top*, it would have been better for them to have staid away. The same may be said with respect to business men. They will find sharp competition, and plenty of it. Dona Ana county does not need lawyers, doctors or store-keepers. She needs miners to prospect and develop her rich mineral deposits; farmers and horticulturists to cover her rich valleys with fields of golden grain and purple-laden vines; stock raisers to cover her broad plains with herds and flocks, and convert her millions of acres of wild grass into wool, beef and leather.

# GRANT COUNTY.

BY COMMISSIONER CHAS. W. GREENE, ASSISTED BY C. A. NEWTON.

Grant county is in the general form of a parallelogram, something more than one hundred miles long north and south, and seventy-five miles wide. Its entire south line is the boundary of Old Mexico, and its west line the boundary of Arizona Territory. The total area is about eight thousand square miles.

In the formation of the new county of Sierra, a small portion was cut off from the northeastern corner by adopting the summit of the Black Range as the natural boundary. This range of mountains extends into the county a short distance, to its termination between the Mimbres and Pinos Altos Mountains, in a southwesterly direction. The Pinos Altos extend in a nearly westerly direction, terminating with the Bear Mountain near Silver City. The Mimbres range extends south along the eastern side of the county, until it terminates in the Cook's Peak range.

The Continental Divide enters the northern end of the county, almost due north of Pinos Altos, and extends in a southerly direction the entire length of the county, crossing the southern line almost due south from Hachita. On the west side of the Divide are the Burro Mountains, which rise from the plain west of the center of the county, and extend northeast, turning to the northwest and crossing into Arizona, where they unite with the White Mountains.

## GRAZING LANDS.

The northern portion of the county is almost wholly mountainous, with the fertile valleys of the Mimbres in the eastern part, and of the Gila river and Duck creek in the west. North of the Burros, and between them and the Mogollons, is an extended mesa or plain. The southern half of the county is a broad mesa, at an average elevation of about five thousand feet. The mesa lands are all covered with a rank growth of the several varieties of the gramma grasses, and afford excellent grazing, with springs and streams so distributed as to make them all available to the stock owners. In the Mimbres Valley considerable attention has been given to agriculture, and its fertile soil produces fine crops of grain and vegetables. A portion of the Gila Valley is also utilized in the same way, especially since the Arizona & New Mexico railroad has been completed through it, giving a decided impulse to settlement and cultivation. Much the larger portion of all the valleys is, however, devoted to stock raising. In the southwestern portion of the county, the valleys of the San Simon and the Animas are noted for their fertility and for their abundant pasturage, and they are now occupied by extensive herds of stock. Indeed, almost the entire county is now grazed to its full capacity by herds of graded cattle, except in portions where the only water supply is from wells, and these are being rapidly taken.

## MINES AND MINING.

The chief industry of the county, and its main reliance for future development, is mining. Already it is the banner mining county of the Territory, although the mine at Lake Valley has been the largest producer of any single mine. Grant county has a larger number of developed mines than any other, and some of them have been steadily producing for the past ten years.

The first mining in the county by Americans was at Pinos Altos, commencing in 1866. The placers of the upper end of Bear creek and of Whisky creek have in the past yielded a large amount of gold, but have generally been abandoned, as far as placer washing is concerned, for a number of years. Many leads have, however, been discovered and located which abound in pockets containing native gold, and these have been worked in a somewhat spasmodic manner. Within the past year Messrs. Place & Johnson have erected small concentrating works there, and have been running regularly upon both gold and lead ores, with very satisfactory results. The general character of the leads which have been worked in the district is free-milling for a depth of ten to thirty feet, and then the ores become rebellious, but it is now claimed that the concentrator is able to handle successfully any of the ores in the district, and there is likely to be a revival of the industry there.

REDUCTION WORKS.

Previous to the discovery of Pinos Altos by Americans, the Santa Rita Copper District had been extensively worked by the native Mexicans, using crude smelters, the product being transported by bull teams to the city of Mexico. The Santa Rita Copper and Iron Company, a Boston organization, secured the property in 1881, and erected extensive works, producing a large amount of bullion, but the price has fallen within the past two years to such an extent as to make the working unprofitable with the present facilities of transportation. The works are in perfect order, (and the mine in the best possible condition,) and are liable to be put in operation at any time, either by a slight advance in price or by the obtaining of better transportation rates. In the same vicinity is the Hanover District, with its immense deposits of magnetic iron ore, yielding an average of at least fifty per cent. The time will come when the district will be the seat of extensive iron furnaces, and it should not be many years hence.

The Georgetown District is about nine miles northeast from Santa Rita. The mines of this district were first opened in 1877, and since that time have been constant producers. The first mill was erected about four miles above Georgetown, on the Mimbres, in 1878. In 1880 the Mimbres Mining Company secured the *Naiad Queen* and other mines, and erected a twenty-stamp mill, which was in operation continuously until the winter of 1883-84, when it was shut down without the assignment of any special reason. Since that time they have been working the property on leases, and claim to be realizing better results. The McGregor Brothers have two mines in the same vicinity, which have yielded largely in net results. The *Commercial* mine is considered one of the best properties in the district, and is producing handsomely of high grade ore. All the mines of Georgetown are silver producers entirely.

At Silver City the first discoveries of silver ores were made in 1869, and the first extensive work was in the Chloride Flat District, where was located the *Providencia* and the *Two Ikes*. Afterward the *Seventy-Six* was discovered, which has been continuously worked from that time to the present, and has yielded to its owner well towards two millions of dollars, although worked by a comparatively small force, and with a mill of limited capacity; nor is it probable that the production to the owner represents nearly all the output of the mine, as there is conclusive evidence that very large sums have been surreptitiously taken from its treasure veins.

The Lone Mountain District was the next discovered, producing the same character of ores, (chlorides, horn silver and native silver, in slate and lime contact,) but it has produced comparatively little. It has not been much worked in the recent past.

About nine miles west of Silver City the Bear Mountain District was brought into prominence by the discovery, in the spring of 1883, of the *Old Man* and the *Penrose Bonanza* mines, which have developed into valuable properties, the former having been sold quite recently to a Colorado company for a good, round sum. It was bonded for ninety days, and within that time the purchase money was taken from the mine. A few weeks since it paid a dividend of about forty thousand dollars from the output since June, 1884. Other mines in the same vicinity are developing, with promise of gratifying results.

Sixteen miles west of Silver City, in the Burro Mountain District, there was discovered, in 1882, some very rich float, and the first discovery was located as the *Blue Bell* mine. The ore is a native silver, found in white quartz, many specimens being obtained of which the silver is the larger portion of the bulk. The mine was purchased, after considerable development work had been done upon it, in the fall of 1883, by some St. Paul parties, who have been working it quite extensively during the past year, and have taken out some wonderfully rich ore. The next discovery made in the district was the *Black Hawk* mine, in which the vein of native silver has extended from the grass roots to a depth of five hundred and fifty feet. It is claimed by those who have the best means of knowing, that no mine in the Territory has ever yielded so much rich ore according to the extent of development. It is now owned by the Solid Silver Mining Company, also St. Paul men, who bought it from a Colorado Springs company. No statement has ever been made public as to the product of the mine, but it is known that a single car load, shipped several months since, realized over sixty thousand dollars, and three car loads recently shipped, averaged eight thousand dollars to the ton. These two are the principal mines of the district, so far as developed.

South of this is the Burro Mountain District, in which copper was found and extensive works erected by the Valverde Mining Company. A large amount of work was done, but it is claimed that the management was inefficient. At any rate there has been nothing done there during the past two years.

Gold Gulch is a new district on the west side of the Burros, from which the reports are most flattering. It is but a few months since the first discovery was made there, but considerable shipments of high-grade ore have already been made, both gold and silver-bearing.

The Steeple Rock Mining District is still farther west, in what is known as the Steeple Rock range. Here the Carlisle Mining Company has been working extensively for the past three years, having erected a completely equipped twenty-stamp mill, which has been most of the time in operation, although hindered at times for lack of water. The ore is gold-bearing, the vein of great width, and most of it has proved profitable for reduction. The shipments from the mine, according to recent reports, reach sixty thousand dollars monthly. There are many flattering prospects in the immediate vicinity, which only await the employment of capital to produce similar results.

Retracing our steps to the eastern side of the county, and we find, directly south of the Georgetown District, some forty miles away, the Cook's Peak District, in which large deposits of galena and lead carbonates have been opened. There has not been extended development yet, for the want of convenient transportation, and lacking a home demand for low-grade ores. The principal mines are the *Montezuma* and the *Graphic*, from the latter of which a considerable quantity of high-grade ore has been taken during the past year. The Montezuma is almost entirely a carbonate ore, very uniform in its character, while the galena of the Graphic has the characteristics found in the *King* mine, of the Eureka District, bearing streaks of fine galena running high in silver.

Crossing the railroad to the south, some twenty or twenty-five miles from Cook's Peak, the Floridas are reached, which have only been accessible to the prospector since the Indians were finally driven from the country. Within the past three years several mineral veins have been discovered, and there has been some development, principally of one mine belonging to the Carroll Brothers, who took from it a considerable quantity of very fine carbonate, which they used as fluxing at their smelters in Shakespeare and Deming. Recently they have been working steadily, and with quite a large force, taking out ore which is eagerly sought by the smelters. The characteristics are similar to those found on the east side of the Cook's Peak range, and it is almost certain that the two ranges, or the space between them, will eventually furnish vast quantities of carbonate ores.

Crossing the mesa, here some fifteen miles wide, we come to the Tres Hermanos, a district which, though far from the railroad and inaccessible, and close to the Mexican line, has sent many car loads of fine ore to the smelters of the north, shipping from Deming within the past year. The principal mine, so far as development is concerned, is the *Cincinnati*, but there are others equally promising. The ores of this district are a mixture of galena, horn silver and chlorides, found in quartz, and resemble those found in the Victoria District, about thirty miles a little west of north.

The mines of the Victoria District, which is about fifteen miles due west from Deming, so far as they are worked belong to a single California company, and they have been steadily producing, with some thirty men employed, during the past two years. They are smelting ores, and nearly the entire product has been shipped to Benson, Arizona, for reduction.

Southwest of this is the Eureka District, from which large quantities of ore were shipped two years ago, but which has been practically idle for the past few months, owing to misunderstandings among the owners. South or southeast from this is the Apache District, which is said to have a system of galena veins carrying a considerable value in silver. Good prospects are found in every direction about Hachita, the central point of the Eureka District, and from some of them miners without capital have taken out considerable high-grade ore for shipment. Quite an extensive plant has been erected here by a Massachusetts company, including a well-appointed smelter, but it has never been put in operation. The *King* mine, and its adjuncts near by, is a property on which a good deal of development work has been done, and from which several car loads of high-grade ore have been shipped. The work is carried on steadily in it at present.

Still west of this is the Shakespeare or Virginia District, in which there has been a large amount of development of both silver and copper properties.

For a time a smelter was located there, but it had to be removed for lack of water. Five miles south is the Pyramid District, which has produced from the *Last Chance* mine a very large quantity of shipping ore. The mine is not now being worked, however, and there is comparatively little work in progress in the district. The Pyramid Company, composed of Rochester (New York) men, purchased the *Viola* and *Penelope* mines, and erected a fine twenty-stamp mill, but it has stood idle ever since its completion, being tied up in litigation.

Still southwest, and in the extreme corner of the county, is the San Simon District, including Granite Gap. The prospects there are very flattering, but there has been but little work done yet.

## COMMERCIAL INTERESTS.

The principal towns or trading centers of the county are Silver City, the county seat; Deming, in the southeast; Georgetown, in the northeast; Lordsburg, in the southwest; and Carlisle, in the extreme west.

Silver City was located after the discovery of the mines there, about 1870, and has grown into a city, several years incorporated, with a population of fully three thousand. Its location is central to so many mining districts that are actually producing, and must eventually become great producers, that it gives fullest assurance of continued prosperity. It needs but a brief review of these conditions and locations to convince any one of its very superior advantages.

A table of distances will show about as follows: Bremen's mine, the *Seventy-Six*, is but two miles away, with the *Providencia* and the *Two Ikes* yet nearer. Pinos Altos is only nine miles, and Fleming and Lone Mountain are about the same. Hanover District is ten miles off, Santa Rita twelve, and Georgetown twenty-three miles; Bullard's Peak District is sixteen miles, the Burro Mountain District about eighteen miles, and Gold Gulch about thirty miles. In addition to these close at hand, are the districts to the north, which find their most convenient outlet and supply point here, even as far north as the Mogollons, ninety miles, which are now regular shippers from that station.

The city has a good location, at an altitude of nearly seven thousand feet, and with ample room to expand indefinitely. It is probably the best built city in the Territory, the construction of wooden buildings having been prohibited since its incorporation. The county court house is a very creditable building, recently completed at a cost of some thirty thousand dollars. It has a strong private bank, a fine public school building, the Grant county hospital, and the Catholics have a thriving educational institution there. Its hotels are well appointed and well managed, and in most respects it is a model frontier city. The Bremen stamp mill is located in the lower part of the city, and still below that is another, more modern mill, which has been run at intervals. Since the railroad was completed, it is found more profitable to ship to the smelters the higher grades of ores. A strong company is now erecting sampling and concentrating works, and it is believed that this will greatly stimulate the production of the county.

Deming, forty-nine miles southeast of Silver City, is emphatically a railroad town, located at the junction of the two great lines, the Atchison, Topeka & Santa Fe, and the Southern Pacific, and the initial point and headquarters for the branch line to Silver City, which it is promised will be extended on west to Benson, to a connection with the Sonora line, also belonging to the Santa Fe company. It did not exist when the Southern Pacific road reached the vicinity, and had no fixed location until the Santa Fe made connection. It is the only railway competing point in the Territory, and for several months has been receiving its freights from both east and west at less than one-fourth the rates paid in the northern or central parts of the Territory. Naturally, therefore, its wholesale trade is growing rapidly, and it is becoming the distributing point for a very large section of the Territory, as well as for all of southeastern Arizona. It is also the location of the only custom house in the Territory along the Mexican line, which is of itself drawing to it a large and rapidly growing trade. Although the town is but four years old, it has a popu-

FILIGREE JEWELRY.

lation of nearly two thousand prospering people, who are working together to build up one of the best towns in New Mexico.

It has many comfortable and cosy dwellings, and several substantial brick business blocks. The city is fortunate in having under it, at an average depth of less than fifty feet, an inexhaustible supply of purest water, which is pumped to the surface and used for all domestic purposes, and largely for irrigating gardens and lawns.

Its location is in the midst of the great mesa, or plain, to which we have before referred, with mountains rising on every hand at a distance of from twelve to forty miles. The soil is fertile, only needing irrigation to make it very productive.

It is likely to be chosen by the Government within a short time as the location of a twelve-company post, by reason of its advantageous location near the line, and because of its very superior railroad facilities.

As a location for reduction works, no point in the Territory offers greater inducements. Fifteen miles to the north is the Cook's Peak District; about the same distance to the west is the Victoria District, and at a like distance to the southeast is the Florida District The Tres Hermanos are about thirty miles to the south, while long wagon trains are freighting ores from the mines of Old Mexico for long distances from south of them, most of it on its way to the Colorado smelters. Recently the Pueblo works have established sampling works at Deming, and are now in the market for any ore that may offer. The Argo Works at Denver, and the Kansas City Smelting and Refining Works, have had a resident agent located at Deming for the past three years. It is the natural supply point for all the mines of the several districts enumerated elsewhere in this article, not only in Southern New Mexico and Southern Arizona, but for a large district of Old Mexico, in which rich mines are awaiting development, and which will not be much longer delayed, now that the danger from Indians no longer exists.

In the southwestern portion of the county, fifty-nine miles west from Deming, is Lordsburg, a railroad town and supply point for quite a section of agricultural and mining country. It is the initial point of the Arizona & New Mexico railroad, a narrow gauge line seventy-one miles long, extending to the great copper mines at Clifton. The road runs up the Gila Valley through a very fertile section of land, which is being extensively improved since its completion, and it is the outlet, not only of the copper district referred to, but for the Carlisle District as well.

LORDSBURG is a town with a good future, having several substantial business houses already located there, and doing a thriving local trade.

CARLISLE is strictly a mining town, owing its growth to the development of the mines in its vicinity, which are improving in yield and increasing in number so fast as to make the town exceptionally prosperous.

GEORGETOWN, in the northeastern part of the county, is also a mining town, and the center of an established industry, now the growth of a dozen years. It has quite a large population, not only of those engaged in the principal industry, but of commercial men, who find a large trade with the agricultural population of the Mimbres Valley.

There are several of smaller villages in the county, but of local interest only.

HUDSON'S HOT SPRINGS, located about half way between Deming and Silver City, are becoming noted for their curative properties, and have been quite extensively improved. The temperature of the springs is about 140 degrees Fahrenheit, and the medicinal constituents are such as to make them very potent in the cure of rheumatic and skin diseases. There is always a considerable number of patients under treatment there, and the fame of the springs is spreading far outside of the Territorial lines. They are easy of access by daily train and hack, and are well kept. Charges are moderate, and we know of no place where the patient will find better opportunity for the recovery of shattered health than at this home-like resort.

It is unnecessary to extend this article farther. We have aimed to present an outline of the county's resources without exaggeration, and with but little of its detail. The intelligent reader cannot but acknowledge that the list is a respectable one for a single county, and that the foundation is laid for one of the wealthiest counties in the United States.

# LINCOLN COUNTY.

Lincoln county is the southeast corner of the Territory, and constitutes about one-fifth of its entire area. It is either level or rolling in the central and eastern portions, and mountainous in the western portion.

The Pecos river runs centrally through the county from north to south, into which numerous streams, having their source in the mountains, find their way. The section east of the river is not so well watered, still it has a few springs which, with wells and the use of windmills, will in time, no doubt, be made available for grazing purposes. The central and eastern portions of the county produce the rich, nutritious grasses known to New Mexico, and are essentially adapted to stock raising. The low temperature of the winters permits grazing the year around, and the cattle keep in good condition.

The western or mountainous portion of the county is rich in the precious and grosser metals, in coal, gypsum and lime, and also possesses much area for grazing. Timber is sufficiently abundant for local demands. There are also many valleys well adapted to agriculture and the fruits, as has been amply demonstrated. The following data will be found valuable to those interested:

## MINES AND MINING.

Mr. L. H. Rudisille, of Vera Cruz, has kindly furnished for the fifth edition of Illustrated New Mexico the following with respect to the mines in western central Lincoln county, and the data following with respect to mines in the Nogal District, which has only recently been segregated from the Mescalario Indian reservation, and hence showing comparatively little development:

The Nogal and White Mountain ranges, situated in the western portion of Lincoln county, might be called one range, only the narrow valley of the Bonito separating them, and even that does not traverse the entire distance through them, but the high ridge or divide on the west side is continuous from one end to the other, in a north and south direction. This seems to be a detached range, rising abruptly from the plain on the north and culminating at Blanco Peak, near their southern terminus, said to be the highest point in the Territory. These mountains are broken into a system of magnificent canons, finding their head at the high, narrow divide or water shed on the west, and, cutting their way through the towering peaks and ridges, pour their waters over the rich valleys for a hundred miles ere they find their way to the Pecos river. In these canons, shut in by the eternal battlements on the west, high winds and dust are never known, making life under the shadows of the pines, beside the laughing streams, one glad day dream, and rendering prospecting for the rich wealth contained in the heart of the mountains a recreation. Beginning on the north, is Tortolita Canon, which penetrates the mountains for over six miles, in which are located some very rich mineral claims, bearing gold and silver. Near the mouth an immense copper belt has lately been discovered, bearing both native copper and copper glance. One assay lately made gave as high as twenty-five per cent copper and nine dollars gold. Over a narrow ridge to the south of this is Dry Gulch, which was worked over twenty years ago for its rich placer gold. Then came Indian troubles, and finally the reservation put it under a cloud for many years, and now it is free again, and some of the old prospectors have come back and are making preparations to wash out the whole gulch in the spring, by hydraulic process. At the head of this gulch some very fine quartz leads are now worked, among others the *American*, giving rich returns in gold from arrastras. Next on the south is Nogal Canon, where a fifteen-stamp mill is running on ore from the *Rockford* mine, and many other claims are being developed which bid fair to surpass it in golden returns. Then comes the *Bonito*, which already in its one year's life has challenged the admiration of the world. The valley of Eagle Creek, and the Ruidoso, which takes us down to the new line of the reservation, but which have heretofore been unknown, are equally grand in natural scenery and rich in the precious minerals as the Bonito and their sister canons.

### NOGAL DISTRICT

is situated in the Nogal Mountains, central western Lincoln county. The following data relate to the mines named and located in the Nogal District:

ON THE RIO BONITO.

The *American*—Has an eight-feet vein of free-milling, gold-bearing ore, obtained from the surface down, between granite wall rocks. It assays from sixty to one thousand dollars; has sixty feet development, an arrastra at work with good results, and a mill in process of erection.

*Mohican*—Has a six-feet vein of free-milling, gold-bearing ore, found at the depth of eighteen feet, between granite. Its development consists of two shafts, thirty-five and twenty-eight feet, respectively, and assays fifteen ounces of gold and two ounces of silver. The Mohican is an extension of the American.

*Rockford*—Seven-feet vein free-milling gold from surface, granite wall rock, assays nineteen to twenty-five ounces; sixty-five feet development, fifteen-stamp mill working.

*Mohawk*—Four-feet vein, one-foot pay streak gold and argentiferous galena from surface, granite wall rock, pans free gold in quantities; thirty-one feet development, and is an extension north of the Rockford.

*Sucker*—Three-feet vein and pay streak, free-milling gold and argentiferous galena from surface, granite wall rock; pans free gold; twenty-one feet development, tunnel face.

*Kingfisher*—A late find, deposit of copper and copper glance from surface, smelting ore; five feet development, and assays from ten per cent. to native copper.

*Dale*—A late find, evidently a large deposit of copper and gold from the surface, smelting ore; ten feet development, and assays twenty per cent. copper and five dollars in gold.

*Idlewild*—A late discovery, evidently an immense deposit, at five feet depth and down, smelting ore; thirty-five feet development, and assays twenty-five per cent. copper and nine dollars in gold.

*Abbey*—Four-feet vein, gold-bearing, obtained at twenty feet depth, free-milling, granite wall rock; thirty feet development, and assays one ounce of gold.

*Copper Queen*—Three-feet vein, galena, iron and copper from end of tunnel, smelting ore; thirty-five feet tunnel, and a shaft fourteen feet, and assays from sixty to sixty-five dollars.

All of the Nogal District is upon the late Indian reservation, and development has just begun.

The following named mines in the Nogal and Bonito Districts were represented by Col. F. A. Blake at the recent Tri-Centenary Exposition, held at Santa Fe, and by him reported for ILLUSTRATED NEW MEXICO:

*Nickey*—Three-feet vein, and twenty-eight-inch pay streak of smelting argentiferous galena, obtained at eight feet depth, granite wall rock; sixty feet development, and assays twenty dollars.

*Triune*—Three-feet vein and eighteen-inch pay streak of smelting argentiferous sulphide of lead, obtained at eight feet depth, granite wall rock; eighty feet tunnel developed, and assays twenty dollars.

*Monarch*—Four-feet vein and pay streak of free smelting, gold-bearing quartz, at twelve feet depth, granite wall rock; twelve feet development, and assays forty dollars.

*Amberdike*—Four-feet vein and pay streak of milling, gold-bearing ore, at eight feet depth, granite and porphyry contact; eight feet development, and assays ten dollars.

*Evening Star*—Three and one-half feet vein and pay streak of free-milling, gold-bearing ore, at twenty feet depth, granite and porphyry wall rock; twenty-five feet development. A late discovery.

*Crown Prince*—Three and one-half feet vein and twenty inches pay streak of argentiferous galena, at ten feet depth, granite and trachyte wall rock; sixty feet tunnel development, and assays twenty dollars. Tunnel being run to strike lead at fifty feet depth.

*Grand Canon*—Ten-feet vein and pay streak of free-milling, gold-bearing ore, at eight feet depth, porphyry and granite wall rock; twelve feet development, and assays twelve dollars.

*Clipper*—Four-feet vein and thirty-eight-inch pay streak of smelting, argentiferous galena and gold, at ten feet depth, granite wall rock; twelve feet development, and assays twenty-four dollars.

*Vera Cruz*—Sixty-feet vein and pay streak of free-milling, free gold-bearing quartz, obtained at 120 feet depth, wall rock of quartzite and talcose slate; 250 feet development, and 100 assays average twelve dollars per ton; average of six mill runs, eight dollars and forty cents per ton.

## BONITO DISTRICT.

The Bonito District is located in the White Mountains, Lincoln county:

*Christmas*—Three and one-half feet vein, and three-feet pay streak of argentiferous galena (silver), obtained from surface down to thirty feet, granite wall rock; thirty-five feet shaft developed, and assays from seventy to two thousand dollars of silver.

*French*—Four-feet vein and pay streak of free-milling, gold-bearing quartz, obtained at four feet depth, wall rock porphyry and granite; development four feet, and assays two dollars and sixty cents silver and eighty dollars gold.

*Silver Crown*—Five-feet surface vein of smelting, silver-bearing ore, (argentiferous galena,) wall rock granite and porphyry, and assays twelve ounces of silver.

*Neptune*—Three and one-half feet vein of smelting galena and sulphurets, between granite and porphyry, and twenty feet development.

*Happy Jack*—Eight-feet vein of argentiferous galena (silver), granite wall rock; twenty-five feet development, no assay made.

*Belle of Bonito*—Silver in argentiferous galena, obtained at depth of twenty feet, between porphyry and trachyte; twenty-feet tunnel developed, and assays twenty ounces.

*Iron Chief*—Five leads on the surface, each from three to five feet wide, of argentiferous galena and iron, between granite and quartzite. Three assays of surface specimens show twenty-three, forty and sixty-four dollars of gold and silver.

*Silver Glance*—Eight-feet vein of silver in argentiferous galena, obtained at twenty-five feet depth, between trachyte wall rocks; twenty-five feet development, and assays twelve ounces.

*Hope*—Ten-feet vein of free-milling gold quartzite, obtained from surface down, between porphyry and trachyte; development thirty feet. low grade.

*Renowned*—Thirty-feet vein, with two pay streaks of three feet each, of smelting silver in argentiferous galena and chloride, obtained at a depth of eighteen feet, between granite wall rocks; development, two shafts of eighteen feet each, assays one hundred and twenty ounces.

*Orphan Boy*—(An extension of the Renowned, and lead running uniform with it.) Seventy-feet vein, with four-feet pay streak of silver in galena and sulphurets; assays from sixty-four to one hundred and twenty ounces.

*Comanche*—Fourteen-feet vein, with four-feet pay streak of silver in argentiferous galena, obtained at fourteen feet depth; twenty-two feet development.

*Cricket*—Silver and gold, galena and sulphuret ore, in granite belt; twenty feet development, assay not known.

*Glow Worm*—Four-feet vein of silver in argentiferous galena, obtained near surface, between granite wall rock; six feet development, and assays sixty-four ounces.

The two following named mines were reported by Mr. Rudisille:

*Chinaman*—Four-feet vein, with two and one-half feet pay streak of smelting silver in argentiferous galena, obtained from surface down, between granite; two hundred feet development, and assays from fifty ounces, mill run, to forty-seven dollars.

*Rosa*—Ten-feet vein and pay streak of smelting silver, in argentiferous galena, found between granite and porphyry; one hundred feet development, assays one hundred dollars, mill run thirty-three dollars.

## RED CLOUD DISTRICT.

The Red Cloud Mining District is located in the Gallinas Mountains, situated in northwestern Lincoln county. The following named mines, all producing smelting ores, located in the above district, were represented by Wm. Niven, Esq., at the Tri-Centenary Exposition, recently held at Santa Fe, and the data were by him reported for ILLUSTRATED NEW MEXICO:

*Grand View*—Eighteen-inch vein and pay streak of copper carbonate and galena, carrying silver from surface down, found between quartzite rock; has ten feet development, and assays fifteen per cent. copper, twenty ounces silver, and five per cent. lead.

*Southern Belle*—Three-feet vein and two-feet pay streak of copper and galena, carrying silver, found from surface down, between quartzite rock; fourteen feet development, and assays ten per cent. copper, fifteen ounces of silver, and fifteen per cent. lead.

*Summit*—Three-feet vein of copper carbonate from surface down, found between quartzite rock; twenty feet development.

*Buckhorn*—Two-feet vein and pay streak of copper carbonate, carrying silver, found from surface down, between quartzite rock; forty feet development, and assays thirty per cent. copper and thirty ounces silver.

*Legal Tender*—Three-feet vein and pay streak of copper carbonate, carrying silver, found at four feet depth, between lime and porphyry; fifty feet development, and assays ten per cent. copper and twenty ounces silver.

*Deadwood*—Two to four-feet vein, with eighteen-inch pay streak of copper carbonate, carrying silver, found from surface down, between quartzite and lime; eighty feet development, and assays thirty per cent. copper, thirty ounces silver, and ten per cent. lead.

*Red Cloud*—One to four-feet vein and pay streak of copper carbonate and galena, carrying silver, found from surface down, between quartzite and lime; sixty feet development, and assays thirty per cent. copper and eighteen ounces silver.

*Daisy*—Four-feet vein and pay streak of argentiferous spar, carrying silver, found at ten feet depth, between lime and quartzite; twenty feet development, and assays twenty ounces silver.

*Over the Hill*—Four-feet vein and pay streak of copper carbonate, found on the surface, between quartzite; twenty feet development, and assays thirty-five per cent. copper.

*Corbin*—Two-feet vein of copper pyrites and hematite of iron, carrying both silver and gold, taken from surface, between quartzite; ten feet development, and yields per assay and mill run, seven ounces silver, three-sixteenths ounce gold, and five per cent. copper.

*Phœnix*—Fifteen-feet vein and pay streak of oxide and hematite of iron, carrying silver and gold, taken from surface, between lime and porphyry; ten feet development, and assays seven ounces silver and one-quarter ounce gold.

*Vulcan*—Forty-five-feet vein, fifteen-feet pay streak of oxide and hematite of iron, carrying silver and gold, taken from surface; ten feet development, and assays eight ounces silver and one-quarter ounce gold.

*Gallinas*—Two feet of quartz, copper stained, carrying silver, taken from surface, between quartzite rock; ten feet development, and assays eight ounces silver.

*Black Hawk*—Three-feet vein of quartz, copper stained, taken at surface, between quartzite and lime; twenty feet development, and assays ten ounces silver and one-eighth ounce gold.

*Rob Roy*—Two feet of quartz, carrying silver, taken from surface, between granite and lime; ten feet development, and assays nine ounces silver.

*North Britain*—Five feet fluor spar and quartz, carrying ten ounces silver and three-sixteenths ounce gold, taken at surface, between lime and porphyry; twenty feet development.

*Muldoon*—Two feet of quartz, carrying eight ounces silver, taken ten feet deep, between quartzite rock; twenty feet development.

*Anchor*—Sixteen-inches pay streak, in three-feet vein of copper-stained quartz, carrying fourteen dollars per ton silver, taken from surface down, between quartzite and lime; sixty feet development.

*Pocahontas*—Two-feet pay streak, in five-feet vein of copper-stained quartz, carrying eighteen ounces silver, taken from surface down, between quartzite rock; thirty feet development.

*Alpama*—Six feet of auriferous spar, carrying one-half ounce gold, taken from surface down, between granite rock; ten feet development.

*Tip Top*—Ten inches to three feet of copper carbonate and copper glance, with argentiferous sulphide of lead, found at ten feet depth, between lime and porphyry; seventy feet development, and assays fifty-four per cent. copper, fifty-three ounces silver, and one-half ounce gold; mill run shows thirty per cent. copper and twenty-five ounces silver, on an output of five tons.

*Wild Goose*—Two-feet pay streak in four-feet vein of copper carbonate and argentiferous sulphide of lead, carrying ten per cent. copper and twenty-five ounces silver, per assay, taken from surface down, between quartzite rock; ninety feet development.

*Tenderfoot*—Fourteen inches to eight-feet pay streak, in from two to fifteen feet vein of copper carbonate, copper glance and argentiferous sulphide of lead, taken from surface down, between lime and porphyry wall rock; two hundred and ten feet development, and assays thirty to fifty-four per cent. copper, twenty to two hundred ounces of silver, and from five to ten per cent. lead; a mill run on ten tons shipped shows forty-two per cent. copper, thirty-six ounces silver, and seven per cent. lead; output to date, one hundred and fifty tons.

## WHITE OAKS DISTRICT.

In the failure of the commissioner to respond with more recent information with respect to this important mining camp, the report of the late commissioner is reinserted. It is due first, however, to say, and the truth thereof is vouched for by the author, that White Oaks is a most important mining center, and the absence of data corresponding to that herein given of the other camps in the county should not be taken as indicating anything to its detriment. The town itself is alive and enterprising, supports a good newspaper, and is the principal commercial and outfitting point in the county. The visitor examining mines in Lincoln county will, from necessity most likely, if approaching from the north or west, first visit White Oaks, when he will have an opportunity to examine in person its mining properties, some of which are superb. Mr. Dolan, the late commissioner, writes:

"The mountain ranges are along the western border of the county, running north and south.

"White Oaks is the center of the mining section. Considerable has been done towards opening the mines in this region. Capital has just begun to take an interest in development, and from what has been done so far the mines promise to be a source of great wealth to the country.

"The famous *Homestake* mine is situated in this camp, and with the mills now ready for operation, it is expected large quantities of gold will soon be produced from this and other valuable properties in the district.

"There are several mining camps in this county. In close proximity to White Oaks, are the Nogal, Vera Cruz, Jicarilla, Gallinas and Rio Bonita, that promise rich results of treasure as soon as means are provided for their reduction.

"Lincoln county has an additional source of wealth to all the above in her extensive coal fields. In the region of White Oaks there are large bodies of coal of a superior quality for coking, and aside from the demand for it for purposes of reducing ores, the Texas Pacific railroad is from necessity obliged to build a road to these coal fields to supply the demand for their own consumption; and the Atchison, Topeka & Santa Fe railroad is also reaching out its line of road to avail itself of the rich deposit.

"In addition to the coal the mountains are heavily timbered with pine, spruce, pinon and cedar, and an abundance of lumber for building and other purposes can be readily obtained."

## STOCK RAISING.

Mr. Dolan also says:

"Stock raising will always be the most prominent and profitable industry of this county.

"For stock raising Lincoln county has no superior. The different kinds of nutritious grasses afford an abundant supply for stock during all seasons of the year, so that vast herds of cattle and sheep subsist on range, winter and summer, and keep in such condition that they are fit to market at any season of the year. The stock men have no difficulty in disposing of their marketable cattle at good prices without being obliged to drive them to market, purchasers taking them from the range where they are raised, the demand being always much greater than the supply, to meet the contracts at military posts, Indian agencies, etc., in this Territory and Arizona. The profit from the industry in this county, where cattle and sheep have such fine ranges, is enormous; and it is within reasonable bounds to say that the average profit from stock raising will exceed thirty-five per cent. on the investment, and there is no immediate prospect of a diminution of that profit by overstocking the market.

"Great attention has been paid in the last few years, to the improvement of breeds of stock, so that now nearly all the cattle and sheep raised are graded up from the former native stock of the country."

# MORA COUNTY.

BY WM. KROENIG, COMMISSIONER.

Mora county is situated in the northeastern part of the Territory, lying immediately south of Colfax county, and stretches from the Panhandle of Texas on the east to the mountains on the west. It has an area of about 3,698 square miles, or 2,366,124 acres.

The population, according to the last census, amounts to 12,000, those of Spanish ancestry constituting far the larger number.

The prairies occupy about three-fourths of the surface, the mountains, with the exception of the "Turkey Mountains," lie altogether in the western part of the county.

The altitude gradually rises from 4,000 feet in the extreme east to 7,000 feet at the base of the mountains, which rise to an altitude of 11,000 feet, a few individual peaks attaining a height of 12,500 feet.

The prairie lands are at present, while the mines are still undeveloped, the principal sources of wealth of the county, furnishing pasturage for 75,000 head of cattle, 125,000 sheep, 10,000 goats and 1,500 horses. So far only the natural water courses, springs and water holes have been used to water the stock, and consequently immense tracts of the best grazing lands are only pastured when abundant rains fill the numerous natural depressions with water; experiments have proved that in these depressions, by sinking wells, water can be obtained within a reasonable distance. Wind mills could be erected at a small cost to furnish an inexhaustible supply of water. In this manner the stock interests could be fully trebled. The sinking of wells would also be advantageous in the herding of stock, as they would soon become accustomed to return to the watering places. The native breed of cattle is of an inferior quality, but is being improved by the importation of graded bulls, and already entire herds of improved cattle can be found. The original stock of unimproved sheep has almost disappeared; among them "scab" was unknown. The importation of fine bucks, mostly Merinos, has improved the size and wool-bearing qualities, but has also brought with them the diseases incident to such change; experience, however, is rapidly teaching the shepherds how to obviate this difficulty.

## SHEEP.

The following extracts from a letter addressed to Commissioner Kroenig, by a large sheep owner, who has been engaged in the business his whole life, are of interest in this connection:

"I have generally found my increase about seventy-five per cent. over all the breeding ewes, but have lost a good many of my lambs during the first twelve months; this I impute to the prevalence of scab and want of shelter in winter, my ground being very exposed. I have determined during the approaching summer to build mud walls (mixed with grass) seven feet high, sufficient to enclose about an acre, in which I can put my flocks during the four months of severe cold weather in winter. I expect completely to eradicate the scab by next shearing time. With my sheep clean, and a good sheltered place during the cold nights, I have no doubt as to the results. Under past circumstances my sheep have paid fairly, having averaged the first year one dollar a head for wool; the second year, one dollar and twenty cents; the third year one dollar and forty cents; the fourth year one dollar and twenty-five cents cash. They have always got into a fine condition in the fall of the year, and, although diseased, have yielded large fleeces of well-grown wool. Last year they averaged six pounds each; the year previous they averaged seven. This year I expect to equal last year's clip, or more if we have rain in April. I may sum up my experience in these words: My sheep get fat every year. They yield a fair increase. They yield a heavy fleece of fine first-class wool. I think it is a man's own fault if he does not thrive as a sheep farmer in New Mexico."

It is evident that horse raising is to be one of the prominent interests of the county, as the grasses of the high table lands appear to furnish their favorite pasture. Horses which never receive any protection or feed of any kind, except what they find on the prairies, come out after a severe winter in fine condition.

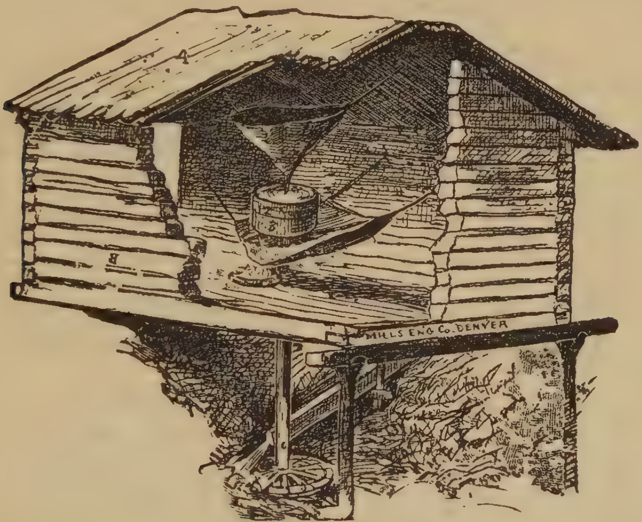
The greater part of the prairie portion of the county is so cut up by ravines, with long belts of pinons and cedar trees running along on the crests of the hills, that ample shade and protection against the cold blasts of wind is furnished to the stock. For this reason our county compares most favorably with the country east and north of us, where the winds have full sweep over the unprotected plains.

## WATER COURSES.

Along the water courses of the streams of the eastern part of the county grow cottonwood, box elder, hack and mulberries, with an abundance of wild plums, cherries, grapes, currants and gooseberries. The bluffs overhanging the rivers are clothed with scrub oak, cedar, pinon, mesquite and a few pines. The central portion of the county has scattered groves of pinon, cedar, and some very good white pine, with patches of scrub oak. The streams of the eastern portion are nearly bare of trees, the former groves having all been cut down by the early settlers. The foothills of the mountains contain the same varieties of timber, but of better growth, the scrub oak growing in places to a height of thirty feet. The pine furnishes good, saleable lumber, which sells at the mill at from $12 to $15 per thousand. In ascending from the foothills to the summit of the mountains the cedar and pinon gradually disappear, quaking aspen and spruce taking their places. Agriculture is carried on by using the water from the rivers for irrigation. The supply of water for this purpose can be largely increased as the area of cultivation is extended, by taking advantage of the natural depressions on the prairie by filling them in autumn, winter and early spring with water from the rivers, which always afford, at these seasons, a plentiful supply. As the evaporation is immense, trees planted on the banks of the streams and main ditches would largely assist to augment the supply of water for irrigation. The mountains also offer suitable locations where, with little work, large reservoirs could be made.

## WHEAT.

Wheat is generally sown in the spring and yields on an average twenty-five bushels to the acre, and frequently, in the vicinity of the mountains, much more. Winter wheat has been tried, and did far better than spring wheat, but can only be cultivated in enclosed fields, as our laws permit stock of all kinds to run at large from the latter part of October until spring. Messrs. S. B. Watrous & Son sowed two years ago thirteen and a half pounds of winter wheat, and harvested one thousand nine hundred and seventy-five pounds. The oats raised here are of an excellent quality, the yield being forty bushels to the acre in ordinary years. A bushel weighs from forty-two to forty-five pounds. Barley yields equally well. Heretofore very little encouragement has been given to farmers in growing it, but the new railroads now open a market to the south, where it is more appreciated. The corn originally grown is of a flinty nature and is considerably mixed with King Philip corn, which was brought from the East many years ago. The nights are too cool in the western and central portions of the county to grow the dented varieties, and twenty-eight bushels to the acre may be considered a very good crop. In the eastern part of the county American varieties can be grown successfully, and yield well. Beans and peas do remarkably well. Hops of an excellent quality can be grown, having no insect enemies nor mildew, and are pronounced by brewers equal to the best New York hops. The yield is from eight hundred to one thousand pounds to the acre. Vegetables of all kinds, of surprising size and excellence, cabbage weighing thirty pounds and upwards, and onions weighing from two to three pounds, grown from the seed the same year, are not rarities.



MEXICAN GRAIN MILL.

## AGRICULTURE.

The greater part of the agricultural lands of the county are especially well adapted to the cultivation of sugar beets, of which Wm. Kroenig has grown sixteen tons to the acre. The manufacture of sugar from the beet has been, in many instances, a failure elsewhere, on account of drouth, but here, with water at command during the whole season, beets could be raised of any size to suit the business. Small fruits, especially currants and gooseberries, bear well, and as mildew is unknown, all varieties of gooseberries can be grown with certainty of success. The first improved fruit trees were planted about fifteen years ago, in the central and western parts of the county; the late-blooming trees have proved to be the best and surest of success. The German prune has produced fine crops of superior fruit. Of cherries the Early Richmond is the safest. Peaches and apricots will only bear in very sheltered locations. It is generally necessary to protect the orchards against the prevailing southwest winds by strips of quick-growing trees, and it is believed that the white willow will give the best protection in the shortest time. On Red river, peaches, apricots, pears, grapes, and in fact all the more tender varieties of fruit, give abundant crops.

Natural meadows are limited, but any piece of prairie land can, in the course of two or three years, be converted into a good meadow by irrigation. The prairies are covered with gramma and blue joint grass. The latter forms a very heavy sod and drives out the gramma. The hay of the blue joint grass is very heavy, and is considered of far better quality than any of the cultivated grasses.

All the mountain streams abound with trout. So far no effort has been made to breed them artificially, although many fine springs offer all the inducements wished for. A number of reservoirs have been made, and as they are fed by rivers which have their sources in the mountains, some trout find their way into the lakes, where they have been caught, weighing as much as five and a half pounds. Antelopes, turkeys, white-tailed deer, quails, sage hens, etc., are still found on our prairies, and in the recesses of the mountains are various wild animals.

The county shows in many places traces of former occupation by an agricultural people. Their mode of building differed in so far from that of the present Pueblo Indians that their villages were of smaller dimensions; and as in all the excavations made earthenware pots, filled with charred corn, were unearthed, it may be presumed that these villages were destroyed by the wild Indian tribes of the prairies. All these ruins show large quantities of pottery, well made arrow points of flint and obsidian, hand mills (metates), etc. The cañons also show the remains of cliff houses.

There is one woolen mill in the county, which has not been run for some time, owing to some differences among the proprietors. The property consists of a good substantial three-story stone edifice, an additional one-story adobe building roofed with tin, out-houses for operatives, stables, and about two hundred acres of land. The power is supplied by an overshot wheel. The property is for sale, and would be a safe investment to any one understanding the business; it is situated on the Mora river, four miles from a railroad station.

The mineral wealth of this county is believed to be enormous, but being on the "Mora grant," is thus far undeveloped; alluvial gold has been found in various places, also silver, copper, antimony, iron and coal. A coal oil spring has recently been discovered twelve miles from Mora, the county seat of the county. The prevailing rock in the eastern and central part of the county is sandstone, which is very suitable for building purposes, and, as in many places, limestone of superior quality crops out, there is no lack of building material. In different parts around the craters of extinct volcanoes is found lava (mal pais), which makes excellent mill stones.

In beauty of scenery, and everything required to make charming country homes, no place on earth is superior to this county. The valley near Watrous attracts the attention of every one entering the Territory from the East, and the scenery around Mora, La Cueva, Agua Negra, Ocate, etc., is of surpassing beauty. For market gardening and fine farming these valleys present extraordinary inducements. The termination of the legal proceedings necessary to establish the title to the Mora grant, (which contains nearly 800,000 acres,) now expected very shortly, will throw open to purchase and improvement large tracts of admirable land, hitherto unobtainable, and this adds still further to the inducements offered in this county to immigration.

# RIO ARRIBA COUNTY.

(SAMUEL ELDOT, COMMISSIONER.)

Rio Arriba county is situated in the northwestern part of the Territory of New Mexico. It extends from east to west, its length being about 250 miles, and its breadth about ninety miles, comprising an area greater than that of some of our most important States, and its average altitude or elevation above sea level is about 7,000 feet.

Its surface is broken, consisting principally of hilly and mountainous country, interspersed with fine rivers, the valleys of which are as remarkable for their loveliness as they are for their fertility. Through this favored and favorite county flows the majestic Rio Grande, the picturesque banks of which fair stream literally "blossom as the rose;" this being especially true of that portion known as the San Juan valley extending from La Joya to Santa Clara.

A word here concerning the history of this Territory. Its name, New Mexico, is a misnomer, inasmuch as it is an extremely ancient country, being gray with antiquity long before the discovery of America by Christopher Columbus in 1492. Almost everywhere in New Mexico the ruins of Indian pueblos have been discovered, the foundations of which (judging by the depth and nature of the deposit above them) must have dated back for thousands of years.

Many of these old towns and cities were of vast extent, some of which are found in the valleys, others on hills and table lands, some upon the mountains, while others again are found far up the face of the high and rocky cliffs, which are nearly if not quite perpendicular.

## ARCHÆOLOGICAL.

In the southern portion of this county the quaint and interesting habitations of the celebrated Cliff-dwellers are found in various localities, and are well worth a visit. The question is frequently asked, "Why did those people locate their dwellings at such a great altitude, in places almost inaccessible?" but it should be remembered that, as self-preservation was then as now the first law of being, it was therefore natural that they should thus locate themselves, for defense against countless hordes of wild Indians.

Many of the ruins of the cities and towns may be seen still, while many others are hidden from view by the accumulation of the soil, through the agency of the elements. The primitive inhabitants of the Territory must have constituted a large population. The character of this prehistoric population, its numbers, manners, customs and peculiarities, are matters coming more properly within the province of the archæologist, than of the writer of this pamphlet; that New Mexico once supported a large number of people, is a fact demonstrated by the scores upon scores of ruins, covering every hillside and nestling in every valley; and now that the neigh of the iron horse is heard in her canons, and upon her mountain tops, and the spirit of the dead past is taking to flight before the restless, nervous, energetic and intensely practical genius of the present, what may we not expect in the future?

There have been four distinct epochs in the history of this wonderful region. 1st. The first settlement of the country, thousands of years ago by the Cliff-dwellers; 2d. The conquest of the same centuries ago by the Spaniard; 3d.

The later occupancy of the country by the Mexican, and 4th and last, the more recent advent of the ever restless and irresistible American, to whom has been reserved the gigantic task of developing the illimitable resources of this most wonderful country, and by whom, eventually, the entire universe will be enriched in a most material manner.

Turn we now, however, to the present condition of the country, and especially of the county, which we would remark *en passant*, through a combination of circumstances, is generally recognized as one of the favorite counties of the Territory.

## TIMBER.

Let us hastily enumerate a few of its manifold advantages: It is abundantly wooded and watered, possessing extensive forests, sufficient to supply the country for ages with fuel, building and fencing material, as well as rare woods for cabinet purposes; while its beautiful rivers supply it with an inexhaustible supply of water, as pure, sweet and cool as can be found in the whole Territory. There are also immense deposits of coal of a superior quality, as well as the best kind of clay for brick-making purposes, and vast quarries of excellent building stone of various kinds.

## STOCK.

Being so well wooded and watered, as well as most abundantly supplied with the most nutritious grasses, renders it a country superior for stock raising, as may be fully verified by a glance at the numerous and extensive flocks and herds of sheep and cattle, in a healthy and thriving condition.

Another advantage which this county possesses for the purposes of stock raising, is that which is found in the shortness and mildness of the winters, which are, in truth, so brief and mild that they do not seem to be winters at all, especially in the southern portion.

A great variety of rare plants, medicinal herbs, and most fragrant and beautiful flowers, adorn the landscape; while the fair scene is almost constantly enlivened by the sweet songs of lovely birds of the most gorgeous plumage.

## AGRICULTURE.

The soil is exceedingly fertile and easily worked, and even with poor implements and indifferent culture produces all kinds of vegetables, corn, wheat, and all the cereals of fine quality and abundance, often yielding as high as fifty bushels to the acre of wheat, and with proper tillage and improved farming implements a greater yield could be had.

On the eastern side of this far-famed valley, between the Rio Grande and the mountains, there are thousands of acres of rich land still awaiting enterprise, to place it under a proper state of cultivation. This land is of a more productive nature than any other within the county limits, and the only thing necessary to develop its hidden wealth is the construction of an irrigating ditch, for the constant and abundant supply of which the waters of the never-failing Rio Grande are ever at hand. The purchase of this land and the construction of an irrigation ditch would prove a most excellent investment for capitalists.

## HORTICULTURE.

Portions of this county are especially adapted to the raising of fruit, as witness numerous orchards. In the gardens may be seen many varieties of melons, apples, pears, peaches, plums, cherries, grapes, strawberries and other fruits, of large size, fine flavor and in great abundance. Indeed, the constant, countless and complicated operations of nature, which have been transpiring for thousands of years, the decay of vast forests, and gigantic vegetable growths, the decomposition of rocks, the agency of heat, winds and waters, have all united in rendering the soil of such rare nature that, literally, "if you tickle it with a hoe, it laughs with a harvest."

## GAME.

This country is also a paradise for sportsmen, as almost all kinds of fish and wild game are plentiful. Here may be found the snipe, quail, partridge, duck, goose, pigeon and turkey, as well as the hare, deer, bear and antelope, and all in great abundance. The atmosphere is clear and pure, the climate genial, healthy and invigorating, the winters short and mild, and the summers long and pleasant. Health being the rule here, and disease a rare exception, this locality is remarkable for the longevity of its inhabitants. Diseases of a pulmonary nature generally yield to the salubrity of this Italian climate. Most of the people live to a good old age.

It will be readily perceived that New Mexico is preëminently the land of ease, of plenty and of the most unbounded hospitality.

## MINERAL WEALTH.

Now a few observations concerning the mineral wealth of New Mexico, and especially of Rio Arriba county. Writers, of late have so expatiated upon the mineral resources of their respective counties and districts, that the financial world regards with distrust any statement in the slightest degree tinged with enthusiasm. How far this distrust may be justified it is not for the writer to say, but knowing its existence and fearing to arouse any suspicions of good faith by indulging in a rosy-hued narrative of the mineral treasures of Rio Arriba county, he prefers to let the subject pass, without any attempt of a detailed description. The mineral veins of Rio Arriba county speak for themselves. The citizens of Rio Arriba county are conservative, and have not organized a mining boom. For the man of moderate capital and good business qualifications no better mining inducements can be found in our country than those this county has to offer. Our mountains contain illimitable treasures, in the shape of lead, iron, copper, silver, mica and gold, and in the near future this beautiful county is destined to be known as the true El Dorado. Rich mines are found in almost every direction. Some of these mines were worked centuries ago by the Spaniards, as the remains of their old works and smelters testify. The old shafts have been filled up, however, as is true of all the mines which were worked previous to 1680, by the native Indians, who had been made to work them under conditions of great hardship, and after thirteen years rebellion the Spaniards were only able to regain their ascendency by a compromise with the native races, the chief feature of which was, that there should be no mining done in the Territory. Where millions were once taken out of these mines with the aid of rude machinery and an imperfect knowledge of mining, with our improved machinery and better knowledge of mining, is it going too far to say, that we may be able to extract other untold millions.

"The geological formation is such that New Mexico must be rich, while the evidence of history shows this Territory to have been a rich mining country when the New England colonists were struggling for existence with the Indians. The simple fact is, that New Mexico in the near future will develop into the richest mining country in the world. The surface indications of the mines of New Mexico are far superior to those of Colorado, Montana, or California, while in every instance the deeper the shafts have been sunk in the mines, the richer the ores." According to ancient and authentic documents, the diezmo or tenth part of what was annually extracted from a single old mine in this same county amounted to several million dollars, and there is no doubt that this Territory will soon be recognized by all nations of the globe as the great treasure house of the entire universe.

The coal mines at Amargo, 25 miles northwest from Tierra Amarilla, during 1883 yielded 17,240 tons of good bituminous coal. Most of this was used by railroad. The measures including the coal of this section cover many hundreds of miles in area.

Our facilities for transportation are excellent, inasmuch as we have the Denver & Rio Grande railway. The great Atchison, Topeka & Santa Fe R. R. is also, it is reported, about to enter this rich field, which from its vast area can certainly give occupation to two lines of transportation and travel, and add no little to their already vast yearly income. The Española or New Mexico division of the Denver & Rio Grande R. R. runs 62 miles through the north part of the county; the New Mexico extension runs 40 miles nearly south, and the San Juan division runs about 120 miles a little north of west, through this county. The Atchison, Topeka & Santa Fe R. R. is within 20 miles of the south boundary of the county, and it is expected that it soon will be connected with the Denver & Rio Grande by rail.

In short, our communication by mail, rail or telegraph is complete, so that we now enjoy nearly if not quite all the advantages known in the States.

The continental divide runs through this county, and at a short distance from the north boundary of the county runs into a low plateau, with an elevation of less than 7.200 feet.

We have also plenty of churches, and efforts are being made to establish good schools, where the different branches of learning may be taught, in both English and Spanish, and the county is distinguished for its devotion to the sacred cause of religion and the upbuilding of education.

The following are among some of our principal valleys:

The valley of the Chama, which is about 150 miles long; the valley of the El Rito, which is about 30 miles long; the valley of the Coyote, which is about 30 miles long; the valley of the Nutritas, which is about 20 miles long; the valley of Los Ojos, which is about 15 miles long; the valley of the Navajo river, which is about 15 miles long; the valley of the San Juan river, which is about 150 miles long; the valley of the Pinos, which is about 12 miles long; the valleys of the Animas and Platte, each about 16 miles long; and the valley of the Marcos, which is about 14 miles long. But chief among them all is the valley of the Rio Grande.

There is also a valley called Laguna de los Caballos, which signifies "horse lake;" it is situated about eighteen miles, a little south of west, from Tierra Amarilla, the area of which is about 20,000 acres. It will store enough water to irrigate at least 10,000 acres of land. North and north-west, between the Laguna and the north boundary of the county, are some twenty lakes, varying in area from 100 to 600 acres, with water sufficient to irrigate at least 20,000 to 30,000 acres. In the neighborhood of the lakes are large quantities of excellent land, which only requires a systematic use of the water accumulated during every season in these lakes to render it immensely productive.

## WILD HOPS.

It would be well here to call attention to the remarkable growth of wild hops in this section of the country; they produce enormously. The hop is much larger than any cultivated variety, and it is infinitely richer in essential oils, and with a remarkably rich aroma. The cultivation of this crop will undoubtedly be a source of immense revenue to this county.

## SAN JUAN COUNTRY.

BY C. H. M'HENRY, ESQ.

The San Juan country of western Rio Arriba county lies in the northwest corner of the Territory, and includes two degrees of latitude and one degree of longitude. A considerable area south of the Rio San Juan, and west to the Arizona line, is included in the Navajo Indian reservation.

WATER SYSTEM.—The San Juan river, heading among the snow-clad mountains of Colorado, crosses the New Mexican line at the 107th meridian, bends well down into the section bearing its name, courses in a westerly direction its whole length, and leaves the Territory at the 109th meridian. crossing its northwest corner into Utah, where it empties into the Colorado of the West. A half dozen other rivers, having their source in the same mountains, flow southerly and empty into the San Juan river. A couple of streams, having their source in New Mexico, flow northerly into the San Juan. All of the streams having their source in the Colorado mountains carry a large volume of water, and are permanent. There is a sufficiency of water, properly utilized, to irrigate three hundred square miles. Only a portion of the river bottoms and the first bench, not more than 11,000 acres, have as yet been placed under ditch and cultivation. The second bench, or mesa, is equally good soil, better, indeed, because deeper and not so subject to frosts, as the bottom lands. It has not as yet been placed under ditch. The work is expensive, because miles of broad ditches are required to reach the upper table lands. The San Juan country thus affords especially good opportunities for colonies, coöperative associations, and to make purchases by original entry. There are also many good openings to be found for individuals with small capital, on the bottom lands and second bench.

First Settlers.—The Indian question being settled, there is no danger from hostiles. The first settlers came into the country six years ago, and to-day number 1,500 Americans, settled principally upon the Platte and Animas, and portions of the San Juan. There are also about 1,200 Mexican settlers located upon the upper waters of the San Juan. The splendid soil and abundance of water for irrigation make the San Juan country one of the very best sections for settlement in the Territory.

Temperature and Adaptation.—The altitude ranges from 6,500 feet in the valleys, to 7,500 feet upon the table lands, and in temperature and adaptation to vegetation is about the same as the Northern States, but without those extremes of summer heat and winter cold. The nights are always comfortable. Peanuts and sweet potatoes, in addition to the general variety of cereals and vegetables of New York and Iowa, grow in perfection and yield. Sugar cane grows in great perfection, and promises to be a leading industry. The country is especially well adapted to horticulture, and already has a nursery at Farmington, planted by Mr. Wm. Locke, one of the pioneer settlers, which has produced fruits and flowers in great perfection. The most of the American settlers have already planted orchards of large and small fruits, some covering as high as twenty acres. Fruit grown in a dry climate, and receiving moisture by irrigation, is much finer in flavor and freer from parasites, besides being equally thrifty, as compared with trees grown in a country of great humidity. Under the mild winters they are not subject to winter-killing. A good market for all surplus products is found in the many mining camps immediately north, and in southern Colorado. Manufactories, as yet, are limited, and are confined to one flouring mill and a few sorghum mills.

Stock—Wool Product.—There is a large amount of live stock in the country, which constitutes the leading business. Cattle are owned in numbers from 100 to 1,200, and run together in localities, all owners participating in the round-up and branding. Horses do well on the range, without extra feed. There are in the country about 100,000 sheep, owned principally by Mexicans. The Navajo Indians also own and have on the range 200,000 sheep. The wool from these sheep was marketed in 1884 to Indian traders, at an average of five cents per pound, shipped East and manufactured, and then shipped back. With the finest water power that the heart could wish, and cheap wool at the door, there is an excellent opportunity for a woolen mill. The average fall of the Rio de Los Animas, running through the country for about twenty-five miles, is thirty feet to the mile.

Society.—Schools and churches are receiving some attention, and society is taking form, and compares favorably with most frontier settlements. The Southern Methodist is the only society now represented on the ground.

The Seasons.—August and September constitute the rainy season, after which the weather is delightful until March. February represents the maximum of winter, with the temperature ranging occasionally a few degrees below zero. April is the month of wind. The country is remarkably healthy—but few doctors, lawyers and preachers.

How to Reach the Country.—The route of travel to reach the San Juan country is by wagon road up the Chama Valley, starting either from Santa Fe or Española. To reach the country by railroad, take the Denver & Rio Grande and go to Durango, a point fifty miles north of the Rio San Juan.

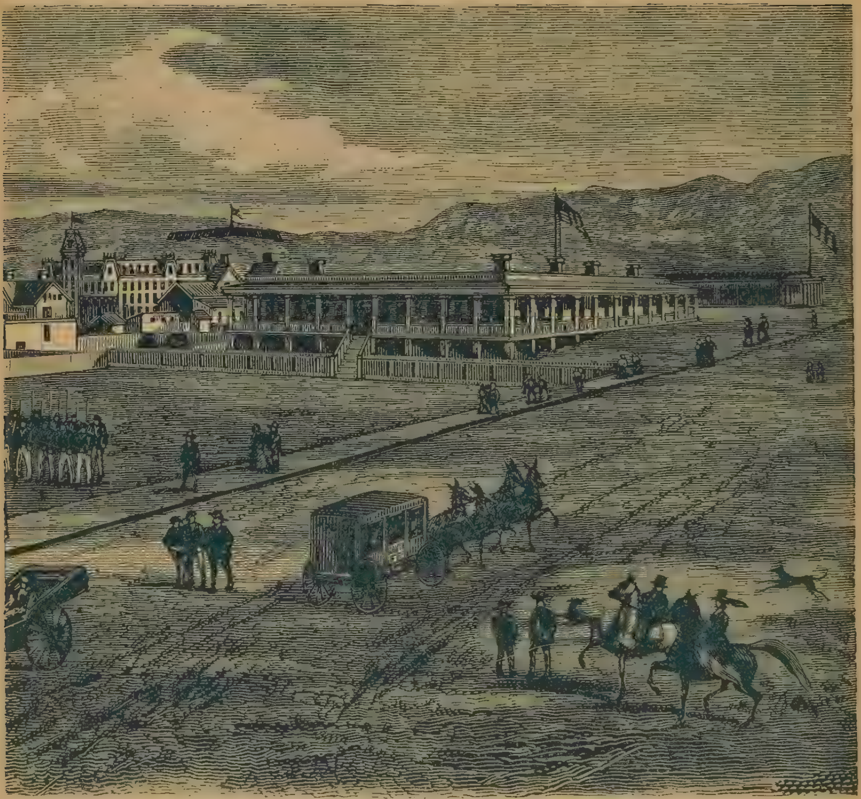
## HEAD-STONE MINING DISTRICT.

The Head-Stone Mining District is situated in Rio Arriba county. It is twenty miles west of Tres Piedres, on the D. & R. G. railroad, and the post-office of the district is at Good Hope. It is gold-bearing, and composed of both placers and lodes, the latter, in exceptional cases, carrying silver. The altitude is 9,900 feet, and as a consequence the snow falls to a considerable depth in winter, causing a low thermometer, and at which time all mining operations are suspended, and the usual summer population of 400 is reduced to fifty. Timber and grass are abundant. A saw mill finds occupation most of the time. The placer grounds are situated in Eureka Gulch, and have an extent of about two miles in length to an average of 100 feet in width, of good pay dirt. The depth runs from ten to thirty feet, with an average of fifteen feet, and yielding from $1.50 to $6.00 to the cubic yard. Two results given from prospecting run, respectively, $25.00 per day to four men, and $9.00 to two men, running fourteen cubic yards. Water is sufficiently plenty in the spring and summer, for about three months, to supply three six-inch nozzles. Hydraulic works were placed during the past season, at an expense of $25,000, and are ready for work in the spring. C. W. Whitney is the superintendent for the company owning these placers, and to whom the editor is indebted for notes on the Head-Stone District. Nearly one hundred locations of gold-bearing lodes have been made adjoining the placers, many of which assay well. A considerable development has been made upon a few of the locations. The *Crœsus* has an eighty-feet shaft, and 225 feet of drift work, with a quartz pay streak of three and one-half feet, between granite. The ore is free milling, and a mill run test shows $50.00 gold to the ton, and a small amount of silver. The *Mogul* and other mines are worked in connection with the Crœsus, and have a 200-feet shaft, and other works. A ten-stamp mill has been erected by the same proprietor, at an expense of $35,000, and was run during the past season. Frequent shipments of the output were made to the First National Bank, of Denver, although we have not been able to command the amount. The pay roll of this proprietor was $3,000 per month. Three miles from Good Hope is Las Tusas Gulch, where there are similar workings to the above, in the same character of ore, although not so far advanced in development. A twenty-stamp mill has just been completed at an expense of $20,000, and was run for a few days in December. The *Bromide* lode, at a camp of the same name, six miles south of Good Hope, has been somewhat developed. A mill run sample taken out by parties examining for the purpose of purchasing, and worked at Denver, yielded $1,200 in gold per ton. Considered altogether, the Head-Stone, for a young district, gives excellent promise for a good season's business during the next year.

## MICA.

The mica mines, at Petaca, have been worked during the summer and fall of 1884, and until prevented by snow, with a force of fifteen men, and have produced in large quantities a good, merchantable article of mica. The necessary machinery is in place for mining and preparing the sheets for market. A considerable quantity has been shipped at Tres Piedres station during the past season to the owners, who reside in Chicago. The sizes average two and one-half by four inches. Exceptionable finds have been made, running up to twelve by twenty inches in size.

The Chama River Placers is the name of a new and promising camp, where the first shovel of dirt was cast only a few months ago. Ditches have been dug, and sluices set for work. The miners are confident of a good season's work, commencing in the spring. The camp is situated on the Chama river, about forty miles northwest of Española, on the D. & R. G. railroad, six miles above Abiquiu. The country at and about Abiquiu and El Rito is particularly rich in copper, and many ancient workings appear. Some development has been made near El Rito, but at the present low prices of copper, nothing has been done toward permanence.



Cañon of the Rio Santa Fe.
The Fort.
Palace Hotel.
Old Spanish Government Palace.
Residence of Gen. L. P. Bradley, Com'dg Dist.
General Offices.

*when they visited Santa Fe, in 1880.*

NEW MEXICO.

# SANTA FE COUNTY.

BY W. G. RITCH.

Santa Fe is one of the central counties of the Territory, and contains an area of 2,250 square miles. It is about seventy-five miles in extent from north to south, and thirty miles from east to west. The surface is about equally divided between mountains and mesas. It has an altitude upon its mesas of from 5,500 feet in the southern portion of the county, to 7,044 at the city of Santa Fe, and to 13,000 feet on Mount Baldy, of the Santa Fe range.

At the period of the Spanish occupation the county was inhabited in nearly every available portion by the native races, as witness the many old pueblo ruins, numbering over fifty. The larger portion of these have been identified by names, as once inhabited by the old Mexican civilization. Four of these ancient villages, to wit, Tezuque, Pojuaque, Nambé and San Ildefonso, are still occupied by the descendants of the same people, and retain almost identically the same habits and customs, notwithstanding three centuries of direct contact with their proselyting conquerors. They are, by occupation, farmers, own small flocks and herds, and maintain the character given them by the early Spanish natives, as an industrious, ingenious and self-sustaining people, having a government of their own, and constituting a law-abiding, orderly and important producing class. The native races, since the great insurrection of 1680, have been gradually dwindling away. Many went to California, some joined the wild tribes, and others went to the Moqui province, and established a pueblo, which is still in existence, and known as the Tegua pueblo. With this gradual disappearance of the aborigenes came Spanish emigrants to possess the land and occupy their places. Since the American occupation of 1846, many Americans have sought and established homes in the county, and the consequence has been the introduction of new methods and new ideas, and a change for the better. The effect is most apparent in the growth of commerce, in largely-increased educational facilities, in the spirit of toleration and liberal progress, in the improved quality of fruit produced, and in the development of the mines.

## OPPORTUNITIES FOR MANUFACTURING.

Santa Fe county possesses a great diversity of raw material for manufacturing purposes. Besides the ores of precious metals, zinc and copper for smelting and reduction, it has both anthracite and bituminous coal, and coke, all of superior quality, lime, iron ore (both magnetic and hematite), and galena for fluxes. Also silicates and manganese, for mixing with the silicates in the manufacture of glass; manganese for the production of chlorine and oxygen gases, and in the preparation of spiegeleisen, an essential property to combine with the magnetic ore in the manufacture of Bessemer steel. It contains large tracts of good-sized pine trees, and an abundance of wood for charcoal; gypsum, marble, flagging and building stone, and conveniently near the towns and railroads; pure mountain water for domestic and manufacturing purposes; clays for fire and building brick. All this is quite general through the county.

## CITY OF SANTA FE.

The city of Santa Fe is admirably located at the northern extension of the central plateau of the Territory, a few miles south of the thirty-sixth parallel, where the cañon of the Rio Santa Fe opens out from the broken country to the east, upon a line running tangent to its southeastern suburbs. Aluminous foot-hills and timbered Sierras, towering one above another, flank the site of the city from every side except the southwesterly. Looking thence the eye reaches off to the Minos Cerrilos, and the adjacent Placer mountains, which form the back-ground of a grand landscape, and is made the more attractive and pleasing from the clear, pure, bright, and invigorating atmosphere of the elevation. Thus nestled beneath natural wind-breaks and adobe hills, the city is particularly favored in the absence of uncomfortable extremes, and the presence of the essential elements of health, comfort and pleasure.

The city of Santa Fe, besides being both the ancient and modern capital of New Mexico—an historic account of which is given elsewhere under the head of "An Aboriginal Civilization"—is likewise headquarters of the military district of New Mexico, which includes the Territory of New Mexico, Southern Colorado and Northwestern Texas.

### RELIGIOUS AND EDUCATIONAL.

Santa Fe is the seat of an Arch-Diocese of the Roman Catholic church, embracing the See of Santa Fe, as metropolis, and the Vicariates Apostolic of Denver and Arizona, as suffragans. The dignity of a Metropolitan See was thus given in a papal brief "under the ring of the fisherman, February 12, 1875," Pius the IX., Pope; and the Bishop of Santa Fe was promoted to be Metropolitan of the new province. His grace, the most Reverend John B. Lamy, D. D., was consecrated to this Arch-Episcopal See, and the pallaum conferred at Santa Fe on the 16th of June, 1875, in the presence of a distinguished assemblage from every portion of the Territory, including among the number eminent divines and the civil and military officials of the Territory.

Educationally, in connection with the See of Santa Fe, there are San Miguel College, for boys, established by the Christian Brothers in 1859, and the Academy of Our Lady of Light, and convent, for girls, established 1853, by the Sisters of Loretto. These are the oldest in education of any similar existing institutions in the Territory. Both are settled in substantial edifices. Besides the Cathedral, represented in a page illustration elsewhere, there are three churches belonging to the hiearchy at Santa Fe, presided over by two vicarios and a number of regular and secular priests. Saint Vincent's Hospital is a well appointed institution, especially for invalids, and is under the Sisters of Charity. There is also a fine edifice, under the same auspices, especially used as an orphan school for girls The chapel of the Convent of the Sisters of Loretto is one of the finest edifices of its character, architecturally considered, west of the Mississippi river.

Santa Fe Academy (unsectarian), under Professor William Strieby, as principal, was established at Santa Fe in 1878. It admits both sexes, and like the two first named is a pay school, and is maintained by tuition. A kindergarten was established by the Academy in 1881, the first in the Territory.

University of New Mexico (Congregational), filed articles of incorporation in 1881, and soon after opened a school. It is now a free school for general pupils, supported by voluntary contributions. There is also a Congregational church.

The first Protestant society in the Southwest was established at Santa Fe, in July, 1849, under the auspices of the Baptist Home Missionary Society. Rev. Hiram Walter Read was the missionary appointed to the work. A school was also established in that connection.

In 1853, under Rev. Louis Smith, as missionary, the Society erected the first church edifice (see illustration) in the Territory; but with the breaking out of the great rebellion abandoned its missions in New Mexico.

MILLS ENG. CO. DENVER.

FIRST PROTESTANT CHURCH IN NEW MEXICO.

[ERECTED AT SANTA FE BY THE BAPTIST HOME MISSIONARY SOCIETY, 1853; SUCCEEDED BY THE PRESBYTERIAN SOCIETY, 1866.]

In November, 1866, the Presbyterians purchased the church and mission buildings of the Baptists, and founded the First Presbyterian Church of Santa Fe; Rev. D. F. McFarland, pastor. With the exception of brief periods, services have been held continuously down to the present time. An academic and free mission school was also started about the same time. The academy was well sustained at first, but with the establishment of Santa Fe Academy, was finally merged into the latter. With slight exceptions the mission school has remained continuous.

In December, 1870, the Santa Fe University, Industrial and Agricultural College, was granted a charter by act of the Legislative Assembly, under the auspices of the same society, but organization was never effected.

In 1882, during the pastorate of the Rev. J. McGaughy, a new, neat brick edifice was erected upon the site of the old church. The new church is handsomely furnished, its yard well enclosed with a fence, is centrally located, and altogether most creditable.

In 1884, an academic school was revived, which commands a considerable attendance.

In 1850 the Rev. George Nicholson, the first representative of the Methodist Episcopal Church, came to Santa Fe, but gave up the work after a couple of years.

In 1880 a society was organized, and the following year a neat church, well furnished, was erected and dedicated; Rev. Thomas Harwood, presiding elder.

The Protestant Episcopal Church was represented at Santa Fe as early as 1867, Bishop Talbot holding the first service, and which was continued at intervals down to 1875. Since that date, with the establishment of the missionary jurisdiction of New Mexico and Arizona, the year previous, service has been continuous, Rev. Henry Forrester being the first rector appointed under the jurisdiction, Rt. Rev. George Kelley Dunlop, bishop, and under whose personal supervision a neat and commodious stone edifice has been erected, and is free of debt.

A school was maintained for a time under Mr. Forrester, but was finally merged into Santa Fe Academy.

Altogether considered, church and educational facilities are well represented at Santa Fe. Two free public schools are maintained by public money. The public-school system of the Territory, including that of Santa Fe county, is not all that could be desired for an enterprising and growing Territory. Still, with the accessions of new population, there are signs of improvement, and much hope for the future.

## INDIAN SCHOOL.

Representatives of the Government have stated the terms upon which an Indian Industrial school could be established at Santa Fe. The required land has been furnished by public-spirited citizens, and the terms complied with. Congress has made a preliminary appropriation of $25,000. It therefore seems quite certain that the school will be among the permanent institutions of the capital city. Much of the credit for preliminary work in this connection is due to Rev. H. O. Ladd. *Later.*—The school opened on the first day of April, with thirty pupils.

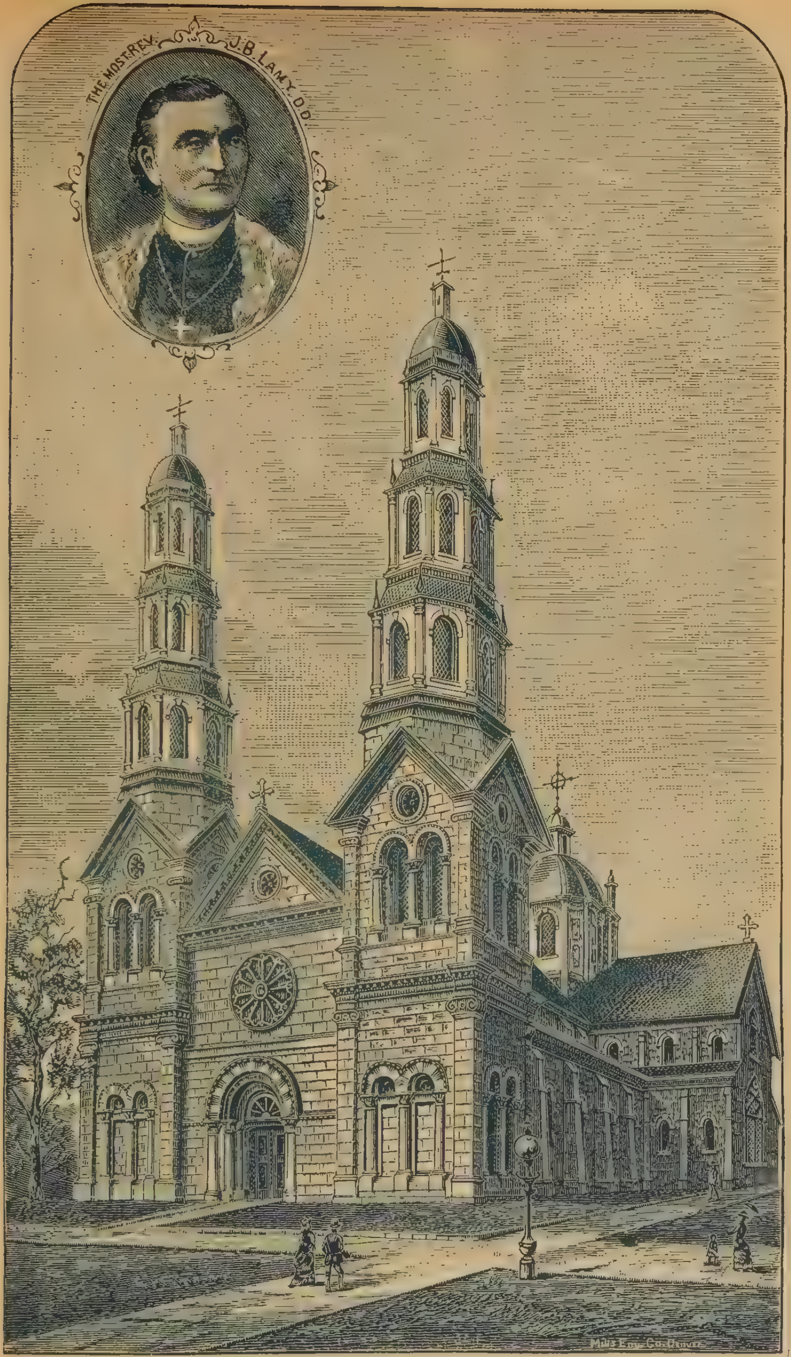
## TOURISTS.

Of the antiquity of Santa Fe and its attractions for tourists, much has been given in the historical article appearing elsewhere. The history of Santa Fe in the past is indeed the history of the old Southwest. Every movement in those days north of the provinces of Zachatecas and Nueva Viscaya, as the present States of Sinaloa and Durango were formerly known, was in some manner connected with Santa Fe, as the then capital of the first and only outlying province north of the present central States of the Republic of Mexico. It was the provinces named which furnished the emigrants who first peopled New Mexico. It was from thence that supplies came overland, a distance of 13° longitude, or over 1,000 miles by the traveled route, through a wilderness beset with wild beasts and savage Indians.

The antiquity of Santa Fe has a world-wide reputation, which attracts to the city individuals, families, parties, and train loads of excursionists, composed of people in every walk of life, from every portion of both Europe and America. Many victims of consumption and asthma become residents, find relief, and live to a ripe old age.

The people of Santa Fe are not selfish with respect to the old city, but recognize the fact that this most venerable of capitals, with all its attractions, including its superb, equable climate the year round, its delightful, health-giving sunshine, and pure, dry atmosphere, and its most charming sunsets of gold and amber, is the property of the whole Territory. Santa Fe attracts visitors who otherwise would never have been known to New Mexico, and many of whom have remained and found homes, some in every city and hamlet in the Territory.

Tourists visiting Santa Fe will find first-class hotels at current rates; will find good carriages and obliging attendants; or, as pedestrians, will find pleasant seats beneath luxuriant shade trees, in the plaza or public square, and having surroundings of interest in the old Government Palace of Spanish royalty, (the United States military headquarters of the district and of the post;) the old warerooms and stores—monuments of the Santa Fe caravans and overland trade, but now devoted to modern commerce. Within the

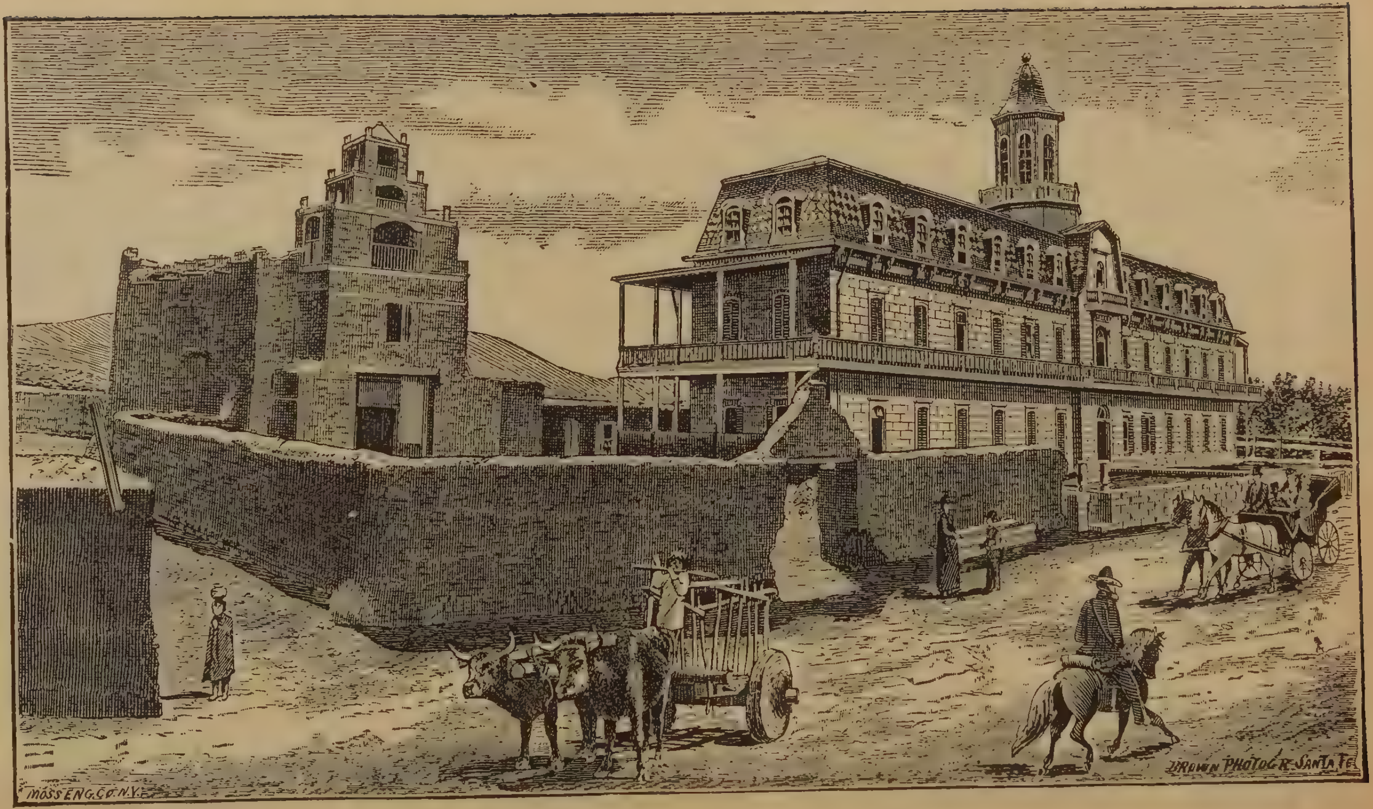

THE MOST REV. J. B. LAMY, D.D.

CATHEDRAL OF SAN FRANCISCO.
(ARCH-EPISCOPAL SEE OF SANTA FE.)

plaza the central feature is the soldiers' monument, and near by, the rustic fountain and the pagoda. From the latter, every pleasant afternoon or evening, are given free concerts by the military band. This beautiful plaza, in so far as its embellishments are concerned, dates only from the latter years of the War of the Rebellion. To Lieutenant John Ayers, then commanding the post of Ft. Marcy, is Santa Fe largely indebted for the work.

About the city, tourists will do well to visit Ft. Marcy, on the bluffs, erected upon the site of the Indian pueblo of "Poge," or "Apoge," the ruins of which were obliterated in the erection of the fort, following the American occupation. *En route* to the fort, and immediately in the rear of Santa Fe Academy, you will pass the ruins of the old castrense, and the burial place of Governor Perez and his associates, once officers of the Territory and victims of the Chimioso insurrection of 1837, and at which time, as currently stated, Manuel Armijo, taking advantage of the anti-taxation spirit, succeeded in making the latter believe, among other terrible things, that Governor Perez was about to tax them for sleeping with their wives, and thus added to the revolutionary spirit. From the heights of Ft. Marcy you have a bird's-eye view of the city, and of the broad stretch of country to the south. Returning, you may follow the drive leading southeasterly along the foot of the bluffs, and see the natives houses, the native people and native methods. Reaching Palace avenue you turn abruptly to the west, passing the Episcopal Chapel, the convent and hospital of the Sisters of Charity, and numerous residences of modern design, all thoroughly in contrast with the antiquated scenes just witnessed. Reaching Cathedral Place, you turn to the left; first visiting the cathedral of the Roman Metropolis, you view a fine, modern edifice of stone, cruciform in plan and Roman Byzantium in design, with 270 feet length of nave and choir, and proportionate otherwise. It is still unfinished, although the corner-stone was laid fifteen years ago. When completed, this architectural pile will be a standing monument to its founder, Archbishop Lamy. Passing from the cathedral to Bishop's Place, you are in front of the metropolitan residence. You seek entrance and obtain it. If accompanied by a chaperon who has an *entree*, and His Grace is not otherwise specially occupied, you very likely will be admitted to his venerable presence. In Archbishop Lamy you will find a pleasant, elderly gentleman, a Frenchman by birth and education, tall and stately, who will kindly show you his garden and grounds, for which he feels a just pride. Briefly expressed, it is a most charming spot, cared for by French gardeners, having delightful walks, shady retreats, miniature lakes for fish, rippling water courses for irrigation, and which grows all the fruits and vegetables in season, adapted to the latitude and altitude. The "Bishop's Garden" is a most successful illustration of the grand adaptation to horticulture of the soil and climate of Santa Fe. Returning, His Grace will no doubt offer you a glass of native wine, and give you an opportunity to retire with pleasant impressions; or, if not too pressed for time, he may accompany you to the grounds immediately opposite, occupied by the buildings and garden of the convent, and the Academy of the Sisters of Loretto. A feature among the buildings is Saint Mary's Chapel. It is built solid, of cut and carved stones, from foundation to turret It is most creditable as an architectural pile, of modest proportions. It cost, under an economical expenditure, $40,000. A fine, modern edifice has recently been added to the academy for young ladies. Passing through the school and recitation rooms, and the dormitories, you will be impressed with the orderly and attentive character of the school surroundings. The grounds, like those of the Bishop's Garden, are well kept, although less in area and elaborateness of design.

You will next direct your course to the old Santa Fe trail; crossing the Rio Santa Fe you will first visit the San Miguel College. Either President Butolph, or his representative, will greet you kindly; you will climb to the college observatory. Here your eye is met with another and different bird's-eye view of the city. Immediately before you will be seen Mexican adobe houses, generally one story in height, built around a court or placita, some of them tastefully cultivated and set with flowering shrubs and plants, the whole



SAN MIGUEL CHURCH AND COLLEGE, 1613–1880.

reminding one of the more modest of the buildings and settings of the Moors. You will likewise have a fine view of the Santa Fe Mountains to the northeast; you will notice one range arising above another until the uppermost towers above the timber-line, and into the regions of eternal snow.

"Hills peep o'er hills, and Alps on Alps arise!"

A little to the east of south, you have facing you, in bold outline, *El Atalaya* (the Watchtower). At the foot of its westerly slope, or spur, is a depression through which passes Chimiyo Arroyo, and in which is located the spring of the same name. It is distant from the old pueblo of Analco, and the present San Miguel Church, one Spanish league (three miles). It was at the Ojo del Chimiyo that Diego de Vargas, with his 1.500 immigrants, and his army, found a refuge during the winter of 1693–94, when his entrance to the Villa de Santa Fe was opposed by the assembled Teguas and Tanos in their ancestral pueblo homes. It was a winter memorable for short rations, much suffering and heartburnings, although De Vargas finally defeated the Indians in battle, and gained the city.

Here you will also visit the old San Miguel Church, whose adobe walls are believed to have been the first church walls erected in New Mexico. Certain it is that it was the first erected in the United States. It was built either during the last of the sixteenth or at the beginning of the following century. The wood-work was destroyed in the great pueblo uprising of 1680. The present structure was restored in 1710. A visitors' register, and the money-box by its side, will suggest to you a contribution. Adjacent to the old church you can see "The oldest house in America." It is a low, two-story structure, the last remains of the ancient Tegua pueblo of Analco. Formerly it was entered as all pueblo houses originally were, from a scuttle in the roof. The sides have since been pierced with doors and windows, which give it a more modern appearance. Two of the old women still living in the house are claimed to be lineal descendants of the aboriginal occupants.

Extending your drive south upon the old Santa Fe Trail to the suburbs, and upon the open plain to the left, you will see before you the camping ground of General Kearney's army on the evening of the nineteenth day of August, 1846, the date of the American occupation of the capital, and of the Territory of New Mexico. It is likewise upon or near the temporary camping ground of De Vargas in the fall of 1693, before going into the winter quarters at the Ojo del Chimiyo.

If you extend your trip out six miles to the Arroyo Hondo, you can find old pueblo ruins, and if you are enthusiastic enough to engage in excavating, you will no doubt be repaid with finds of archæological remains. If you were on horseback and had a guide, starting in the morning, you can make an ascent of El Atalaya, before referred to, and view the landscape all about as far as the eye can reach; attaining the summit, you will be in prime condition for a good lunch, and by the time you have returned home will be in a better condition for a splendid night's sleep. The Watchtower, the English name for this peak, was occupied much of the time in early days by detailed sentinels of both Mexicans and Spaniards, in watching the movements of the enemy.

Resuming the carriage, you follow the southern outskirts of the city, headed to the west, crossing El Camino del Espejo, the road upon which Espejo, when seeking entrance to the ancient pueblos, now Santa Fe, was "met by 40,000 Indians." Continuing on you pass the large brick building erected under Congregational auspices as Whitin Hall, and now used for free educational purposes, supported by private subscriptions. Turning to the right at the A. T. & S. F. Rly. track, you finally reach the Guadalupe church and El Camino del Diego de Vargas, the road leading westerly and past the Mexican village of Aguá Frio. It was by this road that de Vargas first entered Santa Fe in 1692, hence its name. Two miles out, at the house to the right, and you are upon the identical spot where Governor Albino Perez, in an unequal personal contest with a squad of revolutionists in 1837, fell mortally wounded. His head was at once severed as a trophy. Looking north to the arroyo at the foot of the bluffs, and near the then Plaza del Rosario and the church of the same name, and you are in sight of the camping ground of the Chimioses, and upon which the head of Gov. Perez was by turns paraded upon a pike and kicked about in the arroyo as a foot ball. The same spot was likewise the seat of the military headquarters of the command of de Vargas at the reconquest of 1694. The Rosario church was then erected as a military chapel. Additional points of interest are the new Presbyterian church, the site upon which the first Protestant church in the Territory was erected in 1853; the "Kit" Carson monument in the foreground of the Capitol square, the rooms of the historical society and mineral exhibit, the filigree jewelry manufactories and curiosity shops. There are delightful drives up Santa Fe cañon to the reservoir and Monument Rock, and by trail to the group of lakes constituting the head waters of the Rio Santa Fe, to Twin Peaks and Mount Baldy. A Montezuma shrine will be found upon the summit of the latter, which is visited annually by the faithful.

MONUMENT ROCK, SANTA FE CANON.

A visit to the Tezuque Indian pueblo, nine miles north on the Oñate trail, would be an afternoon well spent.

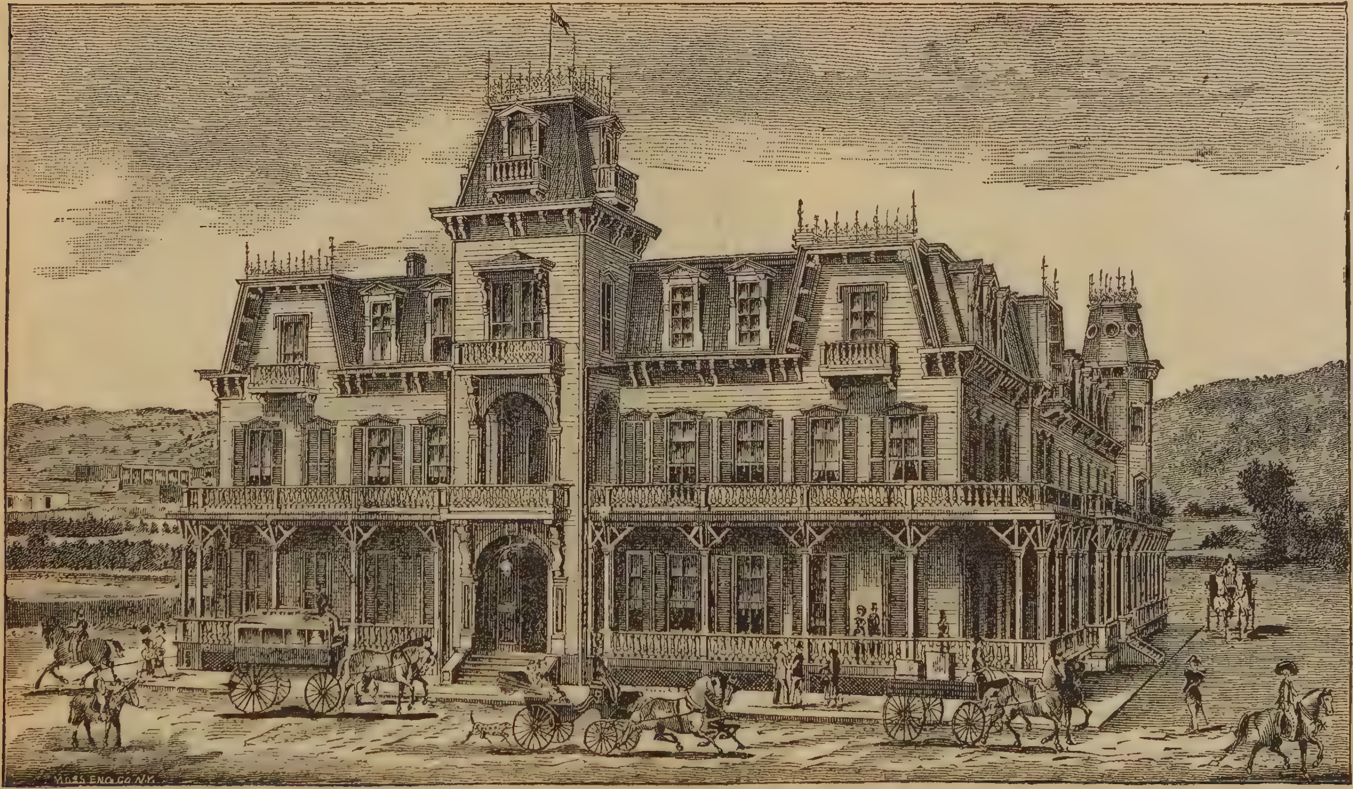
Take the Camino de Espejo south, to the Cerrillos mining district, visit the old Spanish mines, notably the Mino del Tiro shaft, and Mount Chalquital, (the site of the old Turquoise mine). This will require an early start, and will make a busy day delightfully employed.

## AS A SANITARIUM.

The following paper is contributed by W. S. Harroun, B. A., M. D., a practicing physician of repute, residing at Santa Fe:

### EQUABLE CLIMATE.

The city of Santa Fe, N. M., lies in a valley at the base of one of the spurs of the Rocky Mountain range. Its altitude is 7,044 feet above sea level.


MOSS ENG. CO. N.Y.

A MODERN SANTA FE HOTEL—(PALACE HOTEL.)

Other local features give it additional favorable peculiarities. On the east, northeast and north it is shut in by the adjacent hills and mountains, thus protecting it, in a great measure, from the cold winds which generally come from those quarters. The general trend of the valley in which the city lies is west southwest. These, and other local features, serve to give the climate of Santa Fe an equability which is as rare as it is desirable. It is never extremely hot nor bitterly cold.* Extreme climates exercise an injurious effect on the human economy; cold climates on the respiratory organs; warm climates on the cerebral and abdominal organs. Year by year the value of change of residence—the application of climate to the treatment of disease—is becoming better understood; and we hope in the near future the value of mountain climates will be appreciated in the United States as they now are, to a great extent, in Europe. Now while this locality has the latitude of 36°, owing to its altitude and other local peculiarities, it in reality has a very different climate from any of the places farther east, approximately of the same parallel. The same isothermal line which runs through Illinois, near Bloomington, passes through Santa Fe. That is to say, the same yearly mean temperature prevails in both places; yet the climate of the two places differs greatly. There is neither the heat in summer, nor the cold in winter, at the capital of New Mexico, which prevails in the Mississippi valley of Illinois and Iowa. Again, the

### DRYNESS OF THE ATMOSPHERE

is such that we have a cool, dry climate the year around; and for most pulmonary complaints it has been abundantly demonstrated that a cool, dry climate is better than a moist, warm one. It has been said that the most important elements in any climate for the treatment of disease are, pure air, free from dust and organic particles; an abundance of sunshine, without excessive heat, so that the invalid may spend much time in the open air; equability of temperature, that the body, weakened by disease, may not suffer from extremes; and a sheltered position from prevailing hot or cold winds. We claim that Santa Fe possesses all these characteristics of a model climate to a great degree. It has the pure mountain air of the regions in view of perpetual snow.

### DISEASES SPECIALLY BENEFITED.

It has a sheltered position, and the pure sunshine of the mountain highlands is poured down without any intervening mists to mar its potency or brilliancy. All mountain climates are distinguished by a lower density of atmosphere; by relatively lower night temperature, and by coolness and dryness; and humidity is often an important factor in the causation of pulmonary consumption. Such climates are indicated where there is any hereditary tendency to pulmonary consumption—in young people who are narrow-chested and stoop-shouldered; or where there are hereditary scrofulous tendencies. They are also curative in chronic pulmonary consumption, if sought before the disease has made too much progress Great benefit is also derived in cases of chronic pneumonia, when the products of the inflamation do not readily disappear. As might be expected, this cool, dry climate is very beneficial in cases of chronic malarial poisoning, especially where the disease has been contracted in some of the moist, warm climates of the South. In such cases it seems to exercise an almost magical influence, by contrast; and the writer has seen this abundantly verified in several instances. In speaking of climate in connection with chronic pulmonary diseases, Dr. Roberts Bartholow, a well-known American authority, says:

"The requisites of a climate for pulmonary invalids * * * are, dryness and elevation. It is in incipient pulmonary consumption that a change to a climate dry, bracing and elevated really exerts a curative influence."

I believe no locality to be better as a tonic and restorative in cases of overwork and worry from business pursuits; and in building up and aiding the

---

*See tables of temperature and humidity following.

SAINT VINCENT'S HOSPITAL, SANTA FE.
(SISTERS OF CHARITY.)

convalescent from many acute diseases. Finally, as a remedy for hay fever, it is unsurpassed.

## DEDUCTIONS.

From the above imperfect delineation of the climate of Santa Fe we may deduce the following propositions:

Elevation and dryness are characteristics to be sought for in a climate for pulmonary invalids.

A cool, dry climate, is better for this class of patients than a moist, warm one.

Equability is a great desideratum.

Pure air and sunshine are most important elements.

Such a climate has Santa Fe, New Mexico.

# TEMPERATURE, RAINFALL AND HUMIDITY.

PREPARED BY LIEUT. W. A. GLASSFORD, U. S. A.

[From Signal Service Records.]

Table showing Heights of Temperature recorded for each month of the year, showing Highest and Lowest ever recorded.

| PLACE. | *Jan.* |  | *Feb.* |  | *Mar.* |  | *April.* |  | *May.* |  | *June.* |  | *July.* |  | *Aug.* |  | *Sept.* |  | *Oct.* |  | *Nov.* |  | *Dec.* |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* |
| Santa Fe, N. M. | 76° | 9° | 75° | 3° | 82° | 0° | 81° | 11° | 89° | 24° | 92° | 33° | [illegible] | 46° | 97° | 40° | 90° | 27° | 85° | 16° | 77° | 11° | 65° | 13° |
| Denver, Col. | 67 | 29 | 72 | -20 | 81 | 10 | 83 | 4 | 92 | 27 | 93 | 38 | 102 | 42 | 105 | 44 | 93 | 28 | 86 | 1 | 76 | 18 | 71 | -25 |
| El Paso, Tex. | 74 | 5 | 82 | 12 | 88 | 21 | 98 | 29 | 101 | 42 | 110 | 50 | 107 | 56 | 105 | 52 | 104 | 42 | 94 | 28 | 82 | 11 | 75 | -5 |
| Silver City, N. M. | 80 | 7 | 80 | 11 | 83 | 9 | 89 | 20 | 92 | 30 | 99 | 41 | 99 | 53 | 94 | 45 | 90 | 33 | 90 | 14 | 80 | 9 | 82 | 5 |
| San Diego, Cal. | 78 | 32 | 82 | 35 | 99 | 38 | 87 | 39 | 94 | 46 | 94 | 51 | 88 | 54 | 86 | 54 | 100 | 50 | 92 | 44 | 85 | 38 | 82 | 32 |
| Salt Lake, Utah | 54 | 0 | 68 | 3 | 77 | 4 | 83 | 19 | 91 | 32 | 96 | 37 | 98 | 45 | 101 | 44 | 93 | 36 | 83 | 22 | 70 | 3 | [illegible] | 10 |
| Washington, D. C. | 71 | 14 | 78 | -1 | 79 | -4 | 90 | 22 | 96 | 33 | 102 | 46 | 102 | 57 | 101 | 50 | 104 | 38 | 92 | 26 | 80 | 12 | 73 | 13 |
| New Orleans, La. | 78 | 20 | 79 | 32 | 84 | 36 | 86 | 38 | 92 | 56 | 97 | 65 | 96 | 70 | 96 | 69 | 92 | 58 | 88 | 40 | 82 | 31 | 78 | 20 |
| St. Louis, Mo. | 72 | 16 | 73 | -3 | 82 | 8 | 87 | 22 | 93 | 32 | 99 | 48 | 104 | 57 | 106 | 55 | 102 | 40 | 90 | 25 | 82 | 5 | 74 | -17 |
| Fort Union, N. M., for 1882 and 1883 | 61 | -30 | 62 | 7 | 71 | 10 | 75 | 9 | 85 | 21 | 95 | 30 | 92 | 40 | 89 | 36 | 83 | 21 | 77 | 14 | 75 | -4 | 65 | 10 |

Table showing Mean Temperature for each month, and Annual Mean.

| PLACE. | Jan. | Feb. | March. | April. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | *Annual Mean Tem.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Fe, N. M. | 28.2° | 31.7° | 39.1° | 45.5° | 56.0° | 65.4° | 68.0° | 65.9° | 59.0° | 49.4° | 36.7° | 30.2° | [illegible] |
| Silver City, N. M. | 37.2 | 41.0 | 47.2 | 52.6 | 61.7 | 70.4 | 71.6 | 68.6 | 62.9 | 54.8 | 42.4 | 38.2 | 54.0 |
| El Paso, Tex. | 46.9 | 50.6 | 57.4 | 61.6 | 73.3 | 81.0 | 81.8 | 78.6 | 72.8 | 64.3 | 50.5 | 46.3 | 63.4 |
| Denver, Col. | 27.1 | 33.0 | 39.4 | [illegible] | 56.9 | 67.0 | 72.1 | 70.5 | 60.7 | 50.2 | 35.5 | 30.4 | 49.2 |
| Salt Lake, Utah | 29.1 | 34.2 | 41.0 | 49.1 | 57.2 | 67.3 | 75.5 | 74.7 | 64.2 | 52.4 | 38.3 | 32.5 | 51.2 |
| San Diego, Cal. | 53.7 | 54.4 | 55.5 | 57.8 | 61.0 | 64.2 | 67.0 | 68.7 | 66.5 | 63.0 | 58.2 | 55.4 | [illegible] |
| Washington, D. C. | 33.5 | 36.0 | 42.3 | 52.8 | 61.4 | 73.6 | 78.2 | 75.0 | 67.8 | 57.9 | 43.8 | 35.4 | [illegible] |
| New Orleans, La. | 54.6 | 58.0 | 63.1 | 68.5 | 75.1 | 81.1 | 82.5 | 81.9 | 77.7 | 70.1 | 60.8 | 54.7 | 69.0 |
| St. Louis, Mo. | 33.1 | 36.5 | 43.5 | 55.1 | 66.5 | 74.9 | 79.0 | 77.3 | 67.9 | 57.6 | 41.9 | 33.8 | 55.6 |

PRAIRIE SCHOONERS UNDER CONVOY—A SANTA FE CARAVAN OF THE THIRD DECADE.

Table showing Mean Annual Rainfall in inches and hundredths.

| *Place.* | *Inches.* | *Place.* | *Inches.* |
|---|---|---|---|
| Santa Fe, N. M. | 13.89 | Ft. Verde, Ariz | 10.80 |
| Denver, Colo. | 14.57 | Phœnix, Ariz | 7.52 |
| El Paso, Tex. | 11.90 | Pioche, Nev. | 6.71 |
| Silver City, N. M | 29.10 | Prescott, Ariz. | 14.24 |
| San Diego, Cala | 9.62 | Stockton, Tex | 17.84 |
| Salt Lake, Utah | 17.24 | Tucson, Ariz | 13.23 |
| Washington, D. C. | 42.63 | Yuma, Ariz | 2.04 |
| New Orleans, La | 64.26 | Visalia, Cala. | 9.36 |
| St. Louis, Mo | 37.46 | Ft. Supply, I. T. | 27.39 |
| Boise City, Idaho | 13.30 | Ft. Grant, Ariz | 15.76 |
| Camp Thomas, Ariz | 10.04 | Ft. Elliott, Tex | 19.24 |
| Cheyenne, Wyo. T. | 10.01 | Dodge City, Kans. | 19.03 |

Table showing percentage of Mean Relative Humidity.

| PLACE. | *Jan'y.* | *Feb'y.* | *March.* | *April.* | *May.* | *June.* | *July.* | *August.* | *Sept.* | *Oct.* | *Nov.* | *Dec.* | *Yearly Mean.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Fe, N. M. | 52 | 54 | 42 | 35 | 30 | 30 | 46 | 51 | 43 | 42 | 49 | 50 | 43 |
| Silver City, N. M. | 58 | 54 | 43 | 34 | 33 | 31 | 53 | 62 | 52 | 49 | 54 | 57 | 49 |
| El Paso, Tex. | 52 | 52 | 38 | 36 | 37 | 39 | 48 | 55 | 56 | 54 | 57 | 57 | 51 |
| Denver, Colo | 53 | 52 | 48 | 48 | 48 | 42 | 46 | 48 | 44 | 44 | 50 | 55 | 48 |
| Salt Lake, Utah | 60 | 57 | 48 | 44 | 39 | 31 | 30 | 30 | 31 | 40 | 51 | 60 | 44 |
| San Diego, Cala | 72 | 75 | 75 | 73 | 74 | 76 | 77 | 77 | 72 | 66 | 67 | 67 | 73 |
| Washington, D. C. | 72 | 68 | 65 | 62 | 63 | 66 | 67 | 73 | 73 | 71 | 71 | 72 | 68 |
| New Orleans, La | 72 | 69 | 70 | 70 | 70 | 72 | 73 | 73 | 72 | 71 | 72 | 73 | 71 |
| St. Louis, Mo. | 70 | 68 | 64 | 58 | 63 | 67 | 67 | 65 | 65 | 63 | 68 | 72 | 66 |
| Mesilla, N. M. | 52 | 46 | 35 | 31 | 29 | 31 | 49 | 53 | 47 | 49 | 46 | 51 | 43 |

## EL OJO DEL XIGANTE.

The spring, well known among the old Mexican people, situate in the foothills immediately east of Santa Fe, and coming along down the centuries of Spanish and Mexican regimés under the name of "El Ojo del Xigante," has been mentioned in the several editions of ILLUSTRATED NEW MEXICO as possessing valuable medicinal properties The location of the springs, however, as published, was by design wrongly given, the parties thus reporting, the latter desiring to secure title. Search being made by other speculative parties, and without success, the impression went abroad that the report of the existence of the springs was without foundation in fact. Of late attention has been redirected to them, and examinations of the water made by competent authority, showing that all and more than was claimed is due to this spring upon its merits. Col. D. L. Huntinton, U. S. A., and curator of the Medical Museum at Washington, upon a partial examination, having only a small quantity of the water, wrote that there was eighteen grains of solid matter to the gallon of water; that it resembled many of the German springs; possessed value in troubles of the bladder, and in catarrh; was probably a gentle tonic, and would be found useful in some forms of indigestion; that soda, lime and magnesia were present as bicarbonates, and also some chlorides and sulphates. He also speaks of the water resembling that of Jemez Springs.

Prof. Clark, of the Smithsonian Institute, making a later and fuller analysis, is quoted as saying: "The water contains enough carbonic acid to retain the carbonates of calcium and magnesium in solution as bicarbonates."

The following analysis is published in a local paper in the same connection:

| | *Parts in 1,000.* |
|---|---|
| Calcium carbonate | 1.538 |
| Magnesium carbonate | 0.605 |
| Sodium chlorides | 0.193 |
| Silicic acid | 0.220 |
| Calcium sulphate | 0.050 |
| Sodium sulphate | 0.225 |
| Total | 2.831 |

The ingredients of these waters will thus be recognized among the informed as comparing favorably with many of the leading sanitary springs of the world. The conclusion is fairly warranted, that among the additional early attractions of old Santa Fe will be bath houses and hotel accommodations in the vicinity of these mountain springs. Groves of pine and cedar and grand landscape scenery are among the attractions of the location of the Ojo del Xigante. The proposed extension of the Santa Fe railroad from the Las Vegas Springs, through the mountains direct to Santa Fe, will not only open to view the grand slopes and elevations of the Santa Fe range, and its timber and mines, but will also bring immediate railway connections, over the wildest of mountains, between the two principal watering places and points of interest in the Rocky Mountains.

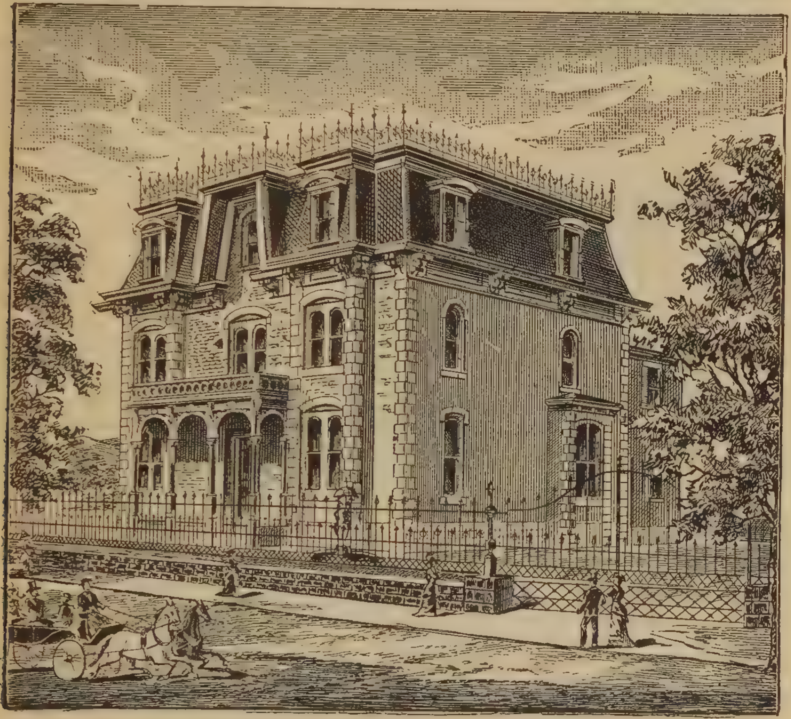
## AGRICULTURE AND HORTICULTURE.

The agricultural lands under cultivation are the Upper Pecos, which courses along the eastern border of the county, along the Rio Santa Fe, running southwesterly from Santa Fe, and for twenty miles along the Rio Grande valley in the northwestern portion of the county. There is likewise a considerable breadth under cultivation along the Rio Nambe, the Tezuque and the Galisteo. The system of cultivation generally in vogue among the natives, is after the manner of the patriarchs of old, illustrations of which may be found in the current dictionaries of Holy Writ. The cultivation and yield is sufficient, however, to satisfy the most critical that with improved methods already introduced, and with the introduction of an economical system of irrigation, that all the grains, vegetables and fruits adapted to Iowa, Nebraska and central Illinois, could be grown with entire success, and in abundance. The great altitude of the county warrants a comparison with States further north, but of much lower altitude. Vegetable gardening and horticulture, and milk and butter ranches offer specially profitable inducements. Lands under ditch can be bought of resident owners for from $10 to $50 per acre. Santa Fe has a considerable range for cattle and sheep, but is mainly occupied by domestic flocks and herds. The population of the county is largely engaged in mining and commercial pursuits. In fruits and vegetables the gardens in and about Santa Fe are the finest in the Territory, and are a standing illustration of the possibilities of agriculture and horticulture in New Mexico under intelligent management. As to variety, flavor and yield, the fruit will compare favorably with the best.

The Bureau of Immigration has on exhibition, at its office in Santa Fe, a sample of corn in the ear, which will compare favorably with Ohio or Iowa corn in size and yield, which was grown in the Placer mountains, Santa Fe county, without irrigation. The sample is from a yield of twelve acres of corn of the same kind.

## A HEALTHY AND CHARMING RESIDENCE CITY.

Santa Fe is free from malaria and excessive heat and cold, and from wind and sand storms. It is supplied with pure water and pure air from the mountains surrounding; it has delightful scenery beneath bright sunshine with glorious sunsets; it has trout in its streams, and game in the adjacent hills and mountains; the people are daily supplied at their doors with the freshest and choicest esculents of home production, and besides possessing more health-giving properties to the square yard than any other spot upon the continent, it is one of the most comfortable residence cities in the world. This fact is rapidly becoming known and appreciated, as witness its growing popularity both as a summer residence for people from the South, and as a winter residence for people from the North; and as an all-the-year-around residence and sanitarium for people variously in search of health, comfort, pleasure and business.



RESIDENCE OF ABRAHAM STAAB, ESQ.

## EARLY COMMERCE.

It was of the country far to the north, of Aztlan, "the white and bright land," that the fabulous stories were told to the viceroy of Old Mexico of the presence of unbounded wealth in precious metals and feather work ready to hand for the taking. The first expedition that reached the country was for the combined purpose of discovery and gain, and was headed by Coronado in 1540. It was speculative in its objects, although it proved a failure and the ruin of its commander, who was disgraced upon his return in consequence of a failure, for which he was in no sense responsible. Such, however, was the method of the times. It does not appear that any of the several expeditions which followed for the next century, were any more successful, commercially considered. Nor does it appear that the commerce of the country amounted to anything worthy of mention during the Spanish regimé, beyond the driving of inconsiderable herds of sheep to the then northern States of Mexico, where they were bartered for articles of necessity, not produced or manufactured in "New Mexico," as the country came to be known in the latter part of the sixteenth century.

While Santa Fe, as before stated, had always been the center of commercial transactions north of the central States of Mexico, it was not until the republic of 1821 succeeded the viceroyalty, that trade was sought and built up to that magnitude which came to be popularly known as the "Santa Fe trade." Under the more liberal policy of the republic, American merchants were admitted with their merchandise from the East. St. Louis was the supply point for this trade, the merchandise being shipped early in the spring by steamboats, first to Independence and afterwards to Westport landing, near Kansas City, Missouri, where the same was transferred to trains of pack animals and wagons. Heavy covered Pittsburg wagons, which were popularly known as "prairie schooners," finally came into general use for transportation, and remained in use until succeeded by railway transportation to an extent that they are now only known to local points off of the lines of railway. The trains or caravans of merchandise, brought to Santa Fe, were usually composed of all the merchants engaged in the business for the time, and who thus united their forces as a matter of mutual protection from hostile Indians. They thus brought their goods to Santa Fe, at which point they were either retailed or sold in job lots or bulk, to traders awaiting their arrival, which was usually in midsummer. Frequently a new caravan was made up from portions of the old, and large quantities of merchandise eventually were thus shipped to Chihuahua, Zachatecas, Durango, and other points in the northern and central States of Mexico. A similar trade was likewise carried on between Santa Fe and Mexico, by the native people, or Mexicans, sometimes extending to the Mexican capital, American goods being shipped south and Mexican goods brought in return. Frequently large herds of sheep were driven to Mexico and exchanged for merchandise.

Such, in brief, was the Santa Fe trade, which maintained its character until the American occupation, and also until gradually superseded by railroads.

In 1831 the overland trade between the East and Santa Fe amounted to $15,000; in 1846 it had increased to $1,752,250, and in 1876 to $2,108,000. In 1859 there were employed in this trade, 5,405 men, 1,532 wagons, 4,377 mules, 350 horses, 12,545 oxen, having a carrrying capacity of 7,660 tons.

## MODERN COMMERCE.

The same old fonda and old mercantile houses of the Santa Fe trade which brought goods across the plains in caravans of "prairie schooners," and sold them at Santa Fe in "ye olden time," in addition to other hotels and mercantile houses, are still found at the old stands, some of them in improved quarters—in salesrooms some of which would compare favorably with any west of the Mississippi. Notwithstanding the competition which has come with railway transportion and the building up of new centers of trade, Santa Fe holds its own, with additions. It has the benefit of the same railway system of any other commercial center in the Territory, and in addition is within thirty miles of the business of the D. & R. G. railway system, with a branch graded and ties at hand, only needing the iron and rolling stock to complete the running connection. It requires no prophet to foretell the early completion of the same. Other systems of railroads have been projected, contemplating all rail connections from Santa Fe with the Gulf of Mexico, with the San Juan country and Utah, with the lower Pecos Valley, and with the timber and mines of the mountains to the north.

Santa Fe is the chief money center of the Territory. It has two old and well established national banking houses, besides hundreds of thousands of dollars for loan in private lands. It has the best and most complete printing and publishing establishment on the high line of the continent outside of Denver. It is the seat of the general offices in New Mexico of the Atchison, Topeka & Santa Fe railroad. It has a live board of trade, the most able and distinguished bar in the Southwest, and the leading daily newspaper of the Territory and two lively weekly newspapers. Besides being the military

MODERN SANTA FE—SPIEGELBERG BLOCK.

headquarters of the district, and the seat of the principal religious establishments, it is the capital of the Territory, where the erection of the capitol buildings has been authorized, and an appropriation made therefor by act of the Legislative Assembly. It is the seat of the Territorial penitentiary, now in course of erection, and of the offices of all the Territorial officers, including those of Governor, Secretary, the Chief Justice, Clerk of the Supreme and District Courts, and of the Bureau of Immigration. The chief Federal offices are here, including Surveyor General, Collector of Internal Revenue, Pueblo Indian agency, Register and Receiver of the Land Office, U. S. Attorney, U. S. Marshal and U. S. Signal Officer. The leading civic societies of the land are represented in eight organizations. It has water works and gas works, a sash and blind and door factory, a cracker factory, brick yards, lime works, marble and flagging stone quarries, coal mines with cheap coal for the millions, manufactories of jewelry, furniture, tinware, harness, saddles, and two breweries. It is the county seat of the county, and the seat of the principal business offices of most of the industrial and productive corporations in the Territory. It has, for the treatment of invalid visitors, four of the most eminent and skillful physicians west of the arid line. It has the most numerous high grade and most liberally patronized schools south of Colorado. It has the best and most refined of society. It possesses more points of interest and is visited by more strangers and tourists than any point west of the plains. It has fine musical talent, a skating rink, dancing academy and a season of amusement from each dramatic troupe crossing the continent by the "all-the-year-around route."

### ICE.

In the pure water of the mountains that flow through the Santa Fe cañon at an altitude of from 7,000 to 8,000 feet and over, are found all the conditions of success in the production of ice. The ice crop is already an important item in Santa Fe trade, and is destined to grow and extend. The whole of Southern New Mexico and Arizona, the western half of Texas and the northern half of Mexico, constitutes as natural a market for the ice of Santa Fe, as the whole country surrounding and adjacent to the Territory constitutes a market for New Mexico coal and coke.

## MINES AND MINING.

*Glorieta* is a thriving railway station on the Santa Fe road, and the shipping point for the Pecos river mines and lumber.

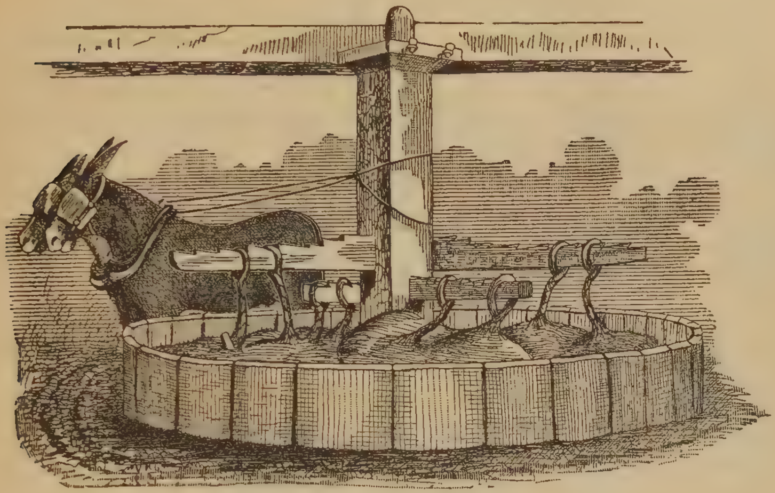
*Cerrillos* is a railroad town of about 300 population on the Santa Fe railroad, 25 miles south of Santa Fe city. It is a center of coal mining operations, and is the natural local supply point of the Old and New Placers and the Cerrillos mining district.

*Carbonateville* and *Bonanza* are prosperous camps in the above district.

*Golden* is the center of the New Placers, and of one of the richest copper, silver and gold-bearing sections in the Territory. Of these mining districts respectively, see at length in the following:

### CERRILLOS DISTRICT.

The Cerrillos mining district is one of the oldest and most marked of the old Spanish mineral developments in the Territory. It is situated 20 miles south of Santa Fe, and was central to the Tegua and Tanos nations of the ancient native races, and whose settlements and homes were in its vicinity The abandoned pueblos of San Marcos, (Ya-atze), Galisteo, Pueble Blanco, San Lazaro, Tash-gatze, (opposite Cochité), Cienega, Chiu-ma, Agua Frio (Quimado), and the pueblos on the Arroyo Hondo, were among the Pueblo villages more immediately surrounding the "Real de Cerrillos." It was the inhabitants of these pueblos, no doubt, from whom the principal details were made by their conquerors to work the mines. It was this fact of continuous enforced labor which had much to do with the many Pueblo Indian revolts of the seventeenth century, and which culminated in the great revolution of 1680. With the final reconquest of 1694 came hopeless desperation, and a rapid abandonment of the pueblos named and others contemporaneous. At the date of the establishment of what is known as the Cerrillos Mining District, (1879), the camp was entirely abandoned as to all former work. The larger porportion of this district is free from land-grant complications.



MEXICAN ARRASTRA.

A mining camp as a general thing is over-rated—it has been so since mining began — and like all excitements, it brings thousands of people from every part of the globe, who expect to become millionaires as soon as they land in the camp. This district, like all others, has had its ups and downs; but the time is fast approaching when the great mystery will be solved. There are good mines here, and those that will pay, and they are being brought to light as fast as means will permit. It is a well known fact that the mineral, as a general rule, lies buried deep, but it has been found in some instances on the surface. We must take into consideration the age of the district. It is comparatively young. Taking into consideration the amount of development that has been done and the amount of capital expended, it will be found that this district has produced more paying mineral to the square inch than most mining districts, other things being equal. Not only is this district coming to the front in producing mineral, but also in producing coal. During the past two years coal has been found in very large quantities, and of a first-class quality. The coal banks are producing in abundance, and the coal is being marketed accordingly.

The amount of capital expended in the recent developments can be approximated with the most satisfaction by examining the amount of development given in the list of mines accompanying this statement. I submit that the showing is excellent for a five-year-old district.

The following statement of the work and prospects of the district is from the pen of Mr. S. H. Bernard, of Carbonateville, an old resident of the camp and a practical miner:

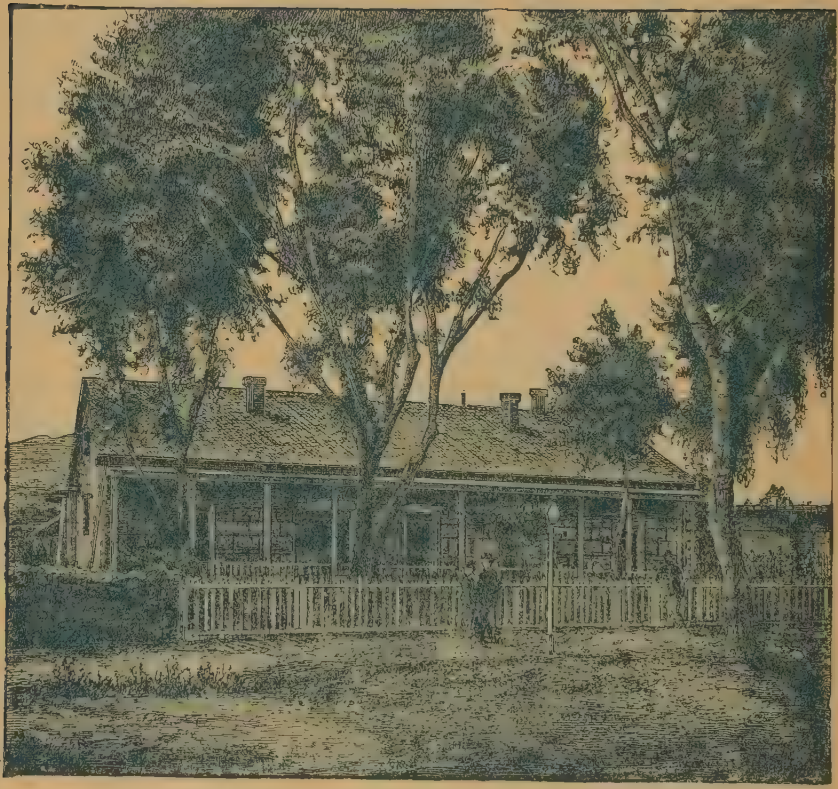
## STATISTICS OF MINES IN THE CERRILLOS DISTRICT.

| NAME. | *Depth of Development—ft.* | *Silver Assay—Ounces.* | *Gold Assay—Ounces.* | *Mill Run—Ounces.* | *Width of Vein.* *Feet.* | *Width of Vein.* *Inch's.* | REMARKS. |
|---|---|---|---|---|---|---|---|
| Atzec | 70 | 111 | ........ | ........ | ........ | 19 | Southern extension of the Marshall Bonanza. |
| Bourbon | 110 | 40 | ........ | ........ | 3 | ........ | |
| Bonanza No. 3 | 340 | 67 | ........ | 30 | ........ | 20 | Has fine machinery. |
| Bottom Dollar. | 110 | 40 | ........ | ........ | 2 | ........ | Old Spanish mine. |
| Big Bonanza | 40 | 25 | 1½ | ........ | ........ | 12 | |
| Blind Tom | 60 | 34 | ........ | ........ | ........ | 12 | |
| Boss | 60 | 43 | ........ | ........ | 2 | ........ | Good prospect. |
| Capital | 330 | 72 | ........ | ........ | ........ | 20 | |
| Cash Entry | 140 | ........ | ........ | 100 | ........ | ........ | |
| Chicago | 75 | 76 | $30 00 | ........ | 3 | 6 | Good prospect. |
| Carbonate | 170 | 1,072 | ........ | ........ | ........ | 22 | |
| Chester | 60 | 2,815 | ........ | ........ | 2 | ........ | Horn silver. |
| Cock-of-the-Walk. | 110 | 100 | ........ | ........ | 4 | 6 | Old Spanish mine. |
| Darling | 43 | ........ | ........ | 27 | ........ | 18 | Old Spanish mine. |
| Ethel | 170 | ........ | ........ | 22 | 2 | 6 | |
| Franklyn | 65 | ........ | ........ | 37 | 4 | ........ | Old Spanish mine. |
| Galena Chief | 45 | 97 | ........ | ........ | ........ | 20 | Old Spanish mine– Splendid prospect. |
| Gen. Moore | 105 | ........ | ........ | 33 | 3 | ........ | Old Spanish mine—Splendid prospect. |
| Good Hope | 130 | 377 | ........ | ........ | 3 | 6 | |
| Granite State | 63 | ........ | ........ | 250 | 2 | 9 | |
| Great Western | 300 | ........ | ........ | 90 | 1 | 8 | |
| Grand Review | 140 | 103 | ........ | ........ | 2 | 1 | |
| Hawkeye | 110 | 83 | ........ | 4 | 4 | 1 | Mina-del-Tero, new extension. |
| Hub | 45 | 65 | ........ | ........ | 2 | 6 | Good. |
| Inter-Ocean | 60 | 16 | ........ | ........ | 2 | 6 | Old Spanish mine—Good. |
| Iola | 50 | 21 | ........ | ........ | ........ | 5 | Old Spanish mine. |
| Lucky | 80 | ........ | ........ | 20 | ........ | ........ | Fair prospect. |
| Globe-Democrat | 80 | ........ | ........ | ........ | ........ | ........ | Good prospect. |
| Little Joe | 45 | 50 | 1 | ........ | 3 | ........ | Prospect. |
| Little Peter | 90 | 70 | ........ | ........ | 2 | ........ | Low grade, 45 per cent. galena. |
| Lone Star | 60 | 200 | ........ | ........ | 1 | 10 | Extension of Mina del Tero. |
| Little Emma | 100 | 23 | ........ | ........ | 3 | 2 | |
| Monitor | 180 | ........ | ........ | 20 | 4 | ........ | Old Spanish mine. |
| Nestor. | 135 | ........ | 1½ | ........ | 40 | ........ | Low grade. |
| Open Sesame | 40 | 72 | ........ | ........ | 2 | ........ | |
| Pelican | 50 | 36 | ........ | ........ | 2 | 6 | Old Spanish mine. |
| Piñon | 103 | 22 | ........ | ........ | 1 | 8 | |
| Platta Verdi | 45 | 17 | ½ | ........ | 2 | 6 | Old Spanish mine—Good prospect. |
| Pole Pick | 73 | 161 | ........ | ........ | 2 | 8 | Splendid prospects. |
| Red Jacket | 82 | 119 | ........ | ........ | 3 | 5 | Old Spanish mine—Good prospect. |
| Grover Cleveland | 55 | 67 | ........ | ........ | 3 | ........ | Old Spanish mine—Ext. Mina del Tero. |
| Ruealena | 150 | ........ | ........ | 80 | 2 | 9 | Old Spanish mine. |
| Santa Fe | 60 | 60 | ........ | ........ | 2 | 6 | |
| Santa Fe Ring | 50 | 34 | 1½ | ........ | 1 | 4 | Fair prospect—Some lead. |
| San Diego | 237 | 16 | ........ | ........ | 5 | ........ | |
| Sleeping Beauty | 112 | 45 | ........ | ........ | 2 | 6 | |
| St. George | 45 | ........ | 3 | ........ | 2 | ........ | |
| Sunrise. | 50 | 68 | ........ | ........ | 3 | ........ | |
| Theresa. | 110 | 67 | ........ | ........ | 1 | 3 | Good low grade. |
| Virgie Lee | 45 | 34 | ........ | ........ | 3 | ........ | Old Spanish mine—Good. |
| Royal Arch | 30 | ........ | 2½ | ........ | 30 | ........ | The vein of this mine crops out above the surface from 10 to 12 feet high. |
| Nick-o-Time | 300 | 95 | ........ | ........ | 1 | 8 | |
| Marshall Bonanza. | 180 | ........ | ........ | 80 | 6 | ........ | It is the same vein as the Nestor. |
| Kittanning | 30 | ........ | ........ | 40 | ........ | ........ | Extension of Sleeping Beauty. |
| B. B. Pears | 176 | 30 | ........ | ........ | ........ | ........ | 45 per cent. lead. |
| So. Ext. B. B. Pears | 80 | ........ | ........ | ........ | ........ | ........ | 45 per cent. lead. |

## REPRESENTATIVE MINES.

I will now give a few lines about our most prominent mines:

The *Bottom Dollar* mine, formerly known as the Santa Rosa, owned and operated by the Bonanza Mining and Tunnel Co., has been developed to the depth of 110 feet. Water was found at this depth. The vein from the surface



HEADQUARTERS OF PRESIDENT HAYES AT SANTA FE, 1880.
(MANSION OF MR. L. SPIEGELBERG.)

has been regular, lying between syenite porphyry formations. The vein at the surface is fully four feet wide but as you go to the depth of fifty feet it grows to its natural width—two feet—and holds good as far as developed. A drift north has been run on a four-foot vein, showing very good mineral. A contract for fifty feet of sinking has been let. There is at present 100 tons on the dump This company has been offered $1,800 per ton for all they can take out. They are using a whim at present, but will no doubt erect machinery this spring.

The *Nick o' Time* has been developed to a depth of 300 feet. Water was struck at that depth. The vein is two feet in width, showing galena and gray copper. A drift has been run north on the vein for 200 feet, and good mineral has been brought to the surface. A cross-cut 50 feet in length has been run east to strike a large body of mineral lying in that direction. Machinery has been placed upon the mine. This mine is owned by the Reualena Consolidated Mining Co.; formation, porphyry and trachyte.

The *Bonanza No.* 3 mine is developed to the depth of 340 feet, water being found at a depth of 300 feet in the main shaft, or shaft No. 1. The vein at the surface was very large, lying between syenite walls. But it lessened to 18 inches when 100 feet was reached. The vein at present in shaft No. 1 is 20 inches, of which a mill-run has been made giving 30 ounces of silver and 70 per cent. of lead to the ton. A new shaft has been sunk near shaft No. 1, to the depth of 56 feet. The vein is now 26 inches in width, assaying 73 ounces silver. At the bottom of this shaft a cave was struck, and owing to the large amount of gas and foul air was stopped, but it has now been penetrated for the length of 30 feet. This cave has two splendid walls of syenite, and both coated with white limestone crystals. Large quantities of mineral are now being taken out of this cave. This mine is owned by the Los Cerrillos and Tennessee Mining Co., of Nashville, Tennessee. Fine machinery has been placed on the mine. The company has stopped work for the present, owing to a law suit.

The *Marshall Bonanza* mine is developed to the depth of 180 feet, water being found at this depth. The vein is in porphyry formation. The vein from the surface has been very large. A drift north on the vein shows it to be 6 feet in width. This mine has produced considerable mineral during the past year. A new concentrator has been erected near the mine. This may be classed as a valuable piece of property. It is now in the hands of Gov. Tabor, of Denver, Colo., who intends working it to it fullest extent. This mine also is working machinery.

The *Great Western* mine has development to a depth of 300 feet. This vein also lies in porphyry formation. The vein is 18 inches in width, carrying high-grade ore. A drift has been run north for a distance of 30 feet, showing same grade ore as at the surface. A mill-run from this ore shows it to be a valuable mine. A whim is now being used for hoisting. This mine is owned by several parties in Santa Fe.

The *Aztec* mine is developed to the depth of 70 feet, showing a vein of mineral assaying 111 ounces to the ton (silver). A tunnel has been run on the vein, showing it up finely. Vein, 20 inches.

The *B. B. Pears* mine is developed down to 160 feet. Water was found at this depth. The vein is 18 inches in width, lying between syenite walls. Drifting between north and south opened up a very strong vein. A mill-run from this mine gives 37 ounces silver to the ton. A whim is being used for hoisting, but the machinery has been ordered from the East. This mine is owned by the Pittsburg Manufacturing Co., of Pittsburg, Pa.

The *Pretty Betsy* has received machinery and had considerable development in the way of drifting. Water was reached at a depth of 83 feet. This mine is owned by California parties.

The *Cash Entry* mine is developed down to 140 feet in the main shaft, and 65 feet in shaft No. 2. This has always been known as the silent mine, owing to the fact that everything was done in secret and silence. No one has been down in this mine with the exception of the employés. But it has been surmised that it was a good thing, and it proved true when 25 tons of second-grade ore brought the round sum of $12,000. As yet none of the highest-grade ore has been sold. They are working a full force of men and will add more soon. The mine was recently sold to parties in Wisconsin for $60,000. It is now being worked by the Cash Entry Mining Co., who will also operate on fifteen other claims. A stamp mill has been erected at this mine.

There are in this district a number of mines that are not developed to any great depth, that show mineral in large quantities, and will prove "bonanzas" to the owners in the near future. The number of locations foots up 1,000. The reason why this district is not further advanced is because the majority of the mines are owned by those who are not able, financially, to develop to any great extent. Until recently a forty-ton smelter has been in operation, turning out ten bars of bullion per day. Litigation between stockholders was the cause of closing down. There is also one concentrator.

The *Grand Central*, is under cover 150 feet, cutting through the Grand Central Mountain. This tunnel has cut nine veins, some showing mineral. This is owned by the Grand Central Tunnel Co., of Santa Fe. Arrangements have been made to place machinery at the mouth for ventilation.

The *Linduda* tunnel is under cover 170 feet, and they are working two shifts. I am not positive how many veins this tunnel has cut. It is being driven through Achivica Mountain. This is mainly owned by parties in Nashville, Tenn.

The *Santa Rosa* tunnel is under cover for 230 feet. It cuts through the Santa Rosa Mountain. A great many veins have been cut by this tunnel.

A stamp mill has been promised near the *Nestor* mine, to work the ores from this mine and the *Royal Arch*, both producing free-milling material.

Miners' wages are $3 per day for dry shafts, $3.50 to $4 in wet shafts. As a general thing work is plentiful, and mining can be done the year round, owing to the mild climate. There are seven companies or clubs operating mines in this district. Carbonateville is situated in the centre of the district, being three miles north from the railroad at Cerrillos. Bonanza City is situated four miles north of Carbonateville. The area of the whole group is thirty square miles. It is noted for the many old Spanish mines or workings, the Mina-del-Tero and the old Turquois mine.

*Chal-chi-huitl* (Turquois). This mine is 20 miles southeast of Santa Fe, and was last worked, according to tradition and folk-lore, by the Pueblo Indians under their Spanish masters, on or before 1680. At that time, according to the same authority, the entire west face of the mountain suddenly caved in, burying a large number of the Indians. The caving in is verified in the disturbed condition of the formation, discovered in recent excavations. This calamity was the immediate cause of a general uprising on the part of the Indians against their task-masters. The turquois has always been the favorite jewel of the western tribes, and was extensively worked by them at the time of the conquest of Mexico. The debris covers an area of some 25 acres and averages from 30 to 80 feet deep. In the year 1880 work began on this great mine by New York parties. The principal work has been in sinking shafts on each side of the mountain; the one on the east side being 60 feet deep and the one on the west side being 80 feet. A tunnel or drift has been run connecting the two. Several caves or ancient workings were opened up during the same year. The entire mountain appears to be undermined by these caves. No idea can be conveyed of this wonderful mine in writing. A visit to the mine is the only way to understand its wonders.

To Professor Powell's "Mineral Resources of the United States, 1883," the editor is indebted for the following: "Turquois is found in the Rocky Mountain division only on Mount Chal-chi-huitl, in Santa Fe county. The mountain is composed of eruptive rocks, probably of tertiary age, and is distinguished from the other peaks of the Cerrillos range by its white color. Chemically, it is a hydrous aluminum phosphate, containing 3.81 per cent copper. Neglecting this constituent, the formula for turquois requires, phosphoric acid, 32.6; alumina, 46.9; water, 20.5.

"Evidently the decomposition of the feldspar of the trachyte furnished the alumina, while the apatite or phosphate of lime, which the microscope detects in thin sections of the Cerrillos rock, supplied the phosphoric acid. It seems probable that the bluish-green color of the mineral is due to the associated copper, which is derived from the copper ores occurring in the Cerrillos.

"The turquois occurs in thin veinlets or concretions throughout the mass of yellow-white rock. The concretions or nuggets are covered with a crust of nearly white aluminous rock, and on being broken generally afford the commoner and less valued varieties of the stone, such as are cut roughly and sold by the Pueblo Indians on the A. T. & S. F. Ry. at Wallace. Fine stones of sky-blue color and of considerable value are extremely rare, and many tons of rock may be broken before finding a stone which could be classed as a gem."

## NEW PLACERS DISTRICT.

The following upon the Old and New Placers, is from the pen of R. W. Webb, Esq.:

This district, delightfully picturesque, is situated in the southwestern portion of the county, and embraces a scope of country 18 miles long by 10 wide, with Golden its business center, distant from the city of Santa Fe 38 miles and from the Santa Fe railroad 16 miles. Within the limits of this district are the Ortiz, Tuerto, and a portion of the San Ysidro Mountains, all mineral-ribbed with huge bodies of gold, silver, copper, iron and coal, while the wash from the Ortiz and Tuerto Mountains, for miles in extent, is extraordinarily rich in placer gold.

### OLD PLACERS.

Modern attention was first attracted to the richness of the wash from the Ortiz Mountains at their northeastern base, in the year 1833, though evidences then existed to show that considerable work had there been done, in a crude way, ages before. In 1834 a settlement was formed, which, in its prosperity, numbered some 3,000 souls, and was called Real de Dolores, but now more commonly referred to as the Old Placers The extracting the gold from sand and gravel constituted, of course, the principal industry, and was performed by "panning" and "rocking," the water being packed in kegs on burros two miles to the richer deposits, or the gravel being packed to the water—small springs. In the winter time, however, placer mining was busiest, as the snows afforded much water, by a melting process carried on with heated stones. Notwithstanding the disadvantages under which these gravel beds were thus worked, they are said to have yielded annually, for several years, from $400,000 to $500,000. A few rich leads were then known in these mountains, but not worked extensively, owing to want of machinery, etc. Some of the richest gold ore from the Ortiz mine was subsequently treated profitably by means of arrastras, following which was a 15-stamp mill in 1868, and another, improved and enlarged, in 1874, now idle.

There is a Mexican tradition, firmly believed by the natives hereabouts, concerning the discovery of gold at the Old Placers, which is here given for what it is worth. In 1832 some freighters lost their cattle, and after several days' search found them in the cañon where is now situated the town of Real de Dolores, and where, also, are several small springs. In a few hours after finding them one of the oxen suddenly died, and his stomach was cut open to ascertain, if possible, the cause of dissolution, when therein was found a considerable nugget of gold. The Mexicans reasoned out that the animal had swallowed the gold while drinking from some shallow spot, and immediately returned on a search for the place. Their efforts were rewarded, and the following year they returned and inaugurated the gold excitement at the now Old Placers.

### NEW PLACERS.

In 1840 the discovery of placer gold was made at the northern base of the Tuerto Mountains, and reports of the fabulous richness of the find soon attracted numbers of people, who established the town of Real de San Francisco or the New Placers, now known as Golden. For years these rich and extentensive beds were worked in the same crude and hampered way as those of the Old Placers, scarcity of water being the great drawback. The annual output from these placers is reported to have been in excess of $500,000, and that at one time they supported a population of near 6,000 souls, The war with the United States first interrupted placer mining here, then the California excitement of 1849; but during the "fifties" the New Placers regained their prestige in a measure, when the war of the rebellion again depopulated the town, and then a fraudulent-grant curse has hung over considerable portions of this rich section, operating as an effectual barrier to legitimate and extensive development.

### GOLD NUGGETS BY THE POUND.

From the New Placers have been taken some of the largest gold nuggets produced by the western hemisphere—the most valuable, eleven pounds nine ounces avoirdupois, was stumbled onto by a Pueblo Indian, and by him bartered away for a little whisky, a blind pony and a crownless hat; another weighing more than $1,700, still another worth nearly $1,600, and several from that on down to the value of $1,000 and less. The encyclopædias corroborate the statements of rich finds in these placers. The wash from both the Ortiz and Tuerto Mountains spreads out on all sides miles in extent, and reaches a depth of from 10 to 100 feet. Some gulches or channels are, as a matter of course, richer than others, but it is scarcely possible to wash a pan of dirt taken from anywhere in this vicinity without getting a color of gold. Recently a gentleman spent several days in this section testing, with a force of men, the placer ground, and his average for a scope of country six miles long, two miles wide, and at least forty feet deep, was a fraction over fifty-seven cents per cubic yard. What a world of wealth with water sufficient for extensive sluicing!

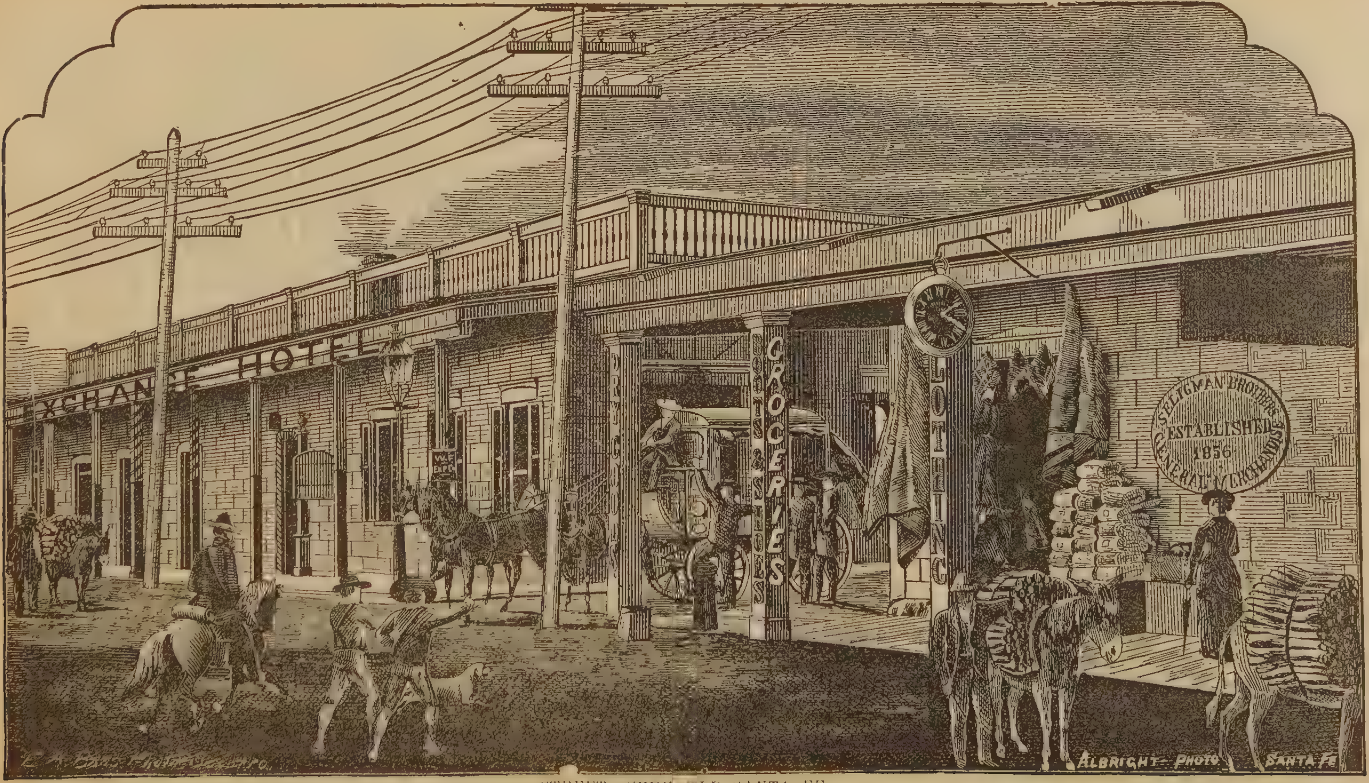
While on this subject it may be proper to add that several experienced gentlemen, recently over the ground, give it as their opinion that water can be forced from the Rio Grande, a distance of about 20 miles, to the placers at Golden and Real de Dolores, for a sum not exceeding $400,000 as cost of construction. The elevation is gradual and not in excess of 1,500 feet.

Numerous machines of various designs, known as "dry washers," "dry amalgamators," and what not, have recently been tested here in the attempt to separate the gold from the sand and gravel of these placer beds, using but little or no water, but thus far all such efforts have proved failures, and no practical output is looked for from these rich washes save by hydraulic sluicing.

### MINES IN THE SAN YSIDRO RANGE.

The mountain ranges of this section all contain leads of gold, silver, copper and iron ores. The formation holding these minerals is lime and porphyry, the principal lodes being held in the contact. The San Ysidro range carries silver principally, which is also true of the Sandias, just to the west, though some fine copper carbonate leads and low-grade gold ore bodies have also been developed in these latter mountains. In the Tuerto and Ortiz ranges, however, copper, gold and iron ores predominate.

One of the best developed and most promising properties in the San Ysidro Mountains, is the *Advance*, which shows a three-feet lead of high-grade silver ore—horn, chlorides and bromides—assays from which have returned as high as 12,000 ounces, while a five-ton mill run of poorly assorted ore and gangue matter yielded over 100 ounces per ton. On the same lead, in course of development and showing the same character of ore, are the *Silver Star*, *Monmouth*, *American Eagle*, *Deboo*, *Johnston* and *Talbott* claims.



STREET SCENE, OLD SANTA FE.

There are, also, in the San Ysidro Mountains several argentiferous galena leads, low grade, more or less developed, but not of sufficient importance to merit special notice. Depth is required to test their value, though the indications are very promising for the amount of work done.

## TUERTO MOUNTAINS.

In the Tuerto Mountains are several valuable leads of gold and copper ores, silver appearing only in small quantities, with the exception of a few claims on the southwestern slope, notably the *Lucky*, *Alamo* and *Silver Cliff*, which contain considerable bodies of argentiferous galena.

The principal lead of the west half of the Tuerto Mountains is an immense contact vein, between lime and porphyry, of copper and gold ores, though where development has penetrated to any considerable depth, say 500 feet, the copper ore closes the gold out, and the vein, 39 feet thick, is composed entirely of sulphides, averaging from 10 to 18 per cent. copper.

There are located on this mammoth lode the *Poor Man*, *Smith*, *Big Copper*, *Mountain Belle*, *Bibo*, *Keystone*, *R. E. Lee*, and other claims, on all of which more or less development work has been and is being done, especially the Smith, Big Copper, Keystone and Lee. Upon opening this vein the gold ore, principally an iron oxide averaging about $15 per ton, lies on top of the copper ore—a carbonate yielding about ten per cent. copper—and forms fully three-fourths of the lead matter; but, as stated above, the gold ore gradually gives way to the copper, till it is entirely displaced by the sulphides. This vein can be traced for more than two miles, and swings around the mountain from east to west.

The Keystone and Lee mines cover this lead on the summit of the range, and the contact on the former claim has the appearance of being over 200 feet wide, as mineral in place is found for that distance across the vein. Several openings on the Keystone, some of considerable extent, show the same character of ore as in other parts of the lead, only in much larger bodies. Some 400 tons of mineral are now on the dumps of this mine.

The Big Copper and Smith mines, adjoining each other, have some 1,200 feet of tunnels, inclines, drifts and cuts, which show this huge lead up to splendid advantage, and demonstrate it to be one of the largest copper properties in the Southwest, to say nothing of the rich chimneys of gold ore extensively encountered in the first workings of the lead.

In the vicinity of this mother lode, and probably stringers therefrom, are numerous veins, some of considerable width and all rich in gold, not a few of which have been followed to a considerable depth, say one hundred feet, but, as a general rule, with unsatisfactory results, though still farther development might produce larger and richer bodies of ore.

Further to the east and south, in the Tuerto range, are numerous valuable properties, notably the *Gleason*, *Sheridan*, *Oro Cash*, *Great Fortune*, *Bonanza*, *Black Bird*, *San Francisco* and *Tip Top*. On the northwestern slope are the *Black Hawk*, *Florence*, *Romero*, *Dowling*, *Columbus*, *Western View*, *Vegas*, *San Jose*, *Iowa*, *Old Timer*, *Jackson* and *Little Jim*, all partaking of the same general character of ores—gold and copper—and some, though containing small leads, are very rich in gold.

Midway, east and west, of the Tuerto range is situated the famous *Delgado* gold mine, which has been worked quite extensively for years, the ore being treated in arrastras. The amount of gold yielded by this property is not known, though it must be considerable, say $500,000, as the ore worked was very rich. Some of the finest gold-quartz specimens ever exhibited came from this mine, and received the medal at the Centennial Exposition, Philadelphia. The vein is a contact, from two to three feet thick, and is considered one of the most valuable properties in this section. The richest placers in the entire district lie below this lead, and in the gulch which receives the wash from it. This mine is now tied up in litigation.

### ORO CUE AND PINE TREE GULCHES.

Further to the east are the *Copper Tip*, on which an 100-feet tunnel was run last year, and *Copper Knight*, both showing well in copper carbonates. *Pine Tree, Tennessee, Empire, Golden Gate, Million, Emerald* (100-feet tunnel last year), *Morton, Effie, Jennie, Chief Justice, Old Tom, Fairmount, Black Prince, Grant, Fannie Vaughn, Gold Cup, Broad Gauge, Toledo, Narrow Gauge, Rebel Boy* (a fine property), *Boston, Pacific* (a most valuable claim), *Bunker Hill, Little King, Decatur, Water Witch, Irvine, Shoemaker*, and others, all showing well in gold ores, and some few in copper. Considerable work has been recently done on nearly all these properties. The last above group of locations are entirely outside of any grant complications or litigation. There is not a single claim but what has improved wonderfully under intelligent direction. As has been demonstrated by two or three mines at the "east end," and in the vicinity of those last named, all that is necessary to make valuable properties of most of the locations are capital and intelligent labor. The leads thereabouts vary in thickness from six inches to as many feet, but a lack of proper facilities for treating the ores, some of which are very refractory in milling, coupled with the impecuniousness of the average prospector, has retarded their proper development. Capital could here find most profitable investments, as the average value of nearly all the veins opened up will not fall far short of $35 per ton in gold.

### A SPECIMEN MINE UNDER DEVELOPMENT.

The best developed and most promising property, and which also belongs to the above group, is the *Era Southwestern*. During last year the vein on this claim was cut by running a drift from the bottom of an 100-feet shaft, and it now shows nine feet of mineral between well-defined walls, making a gain in lead matter of six feet in sinking sixty. The average value of the ore, in iron oxide and sulphide, as given by two assayers in duplicate tests, is reported at $43.50. This property is now in the hands of a company who will soon erect works for the handling and treating the ores. The Era Southwestern bids fair to prove a bonanza, and is surrounded by claims evidently as good, considering the amount of work done.

### IN THE ORTIZ RANGE.

In the Ortiz range, lying four miles to the north of the Tuerto Mountains, the leads contain gold, copper and iron ores, with occasional silver-bearing veins. Several properties in these mountains have been worked quite extensively of late and in years past, producing large sums of gold. Some of the most valuable gold-yielding leads have, at a depth of 100 feet or more, changed to copper carbonates and sulphides, following the characteristics of several veins in the Tuerto Mountains already referred to, while other gold veins hold out and give evidence of permanency and great value. The copper ores of this range average from 20 to 30 per cent. copper under present development, and lie in veins from six to twenty feet wide. Other well defined leads, from two to five feet wide, show more or less silver ores, principally galena, as in the *Home-Stake* and *Emporia* mines, (on which considerable work has been done this year.) Assays from these properties give 50 to 75 ounces silver and some gold.

The principal mines on the southern slope of the Ortiz Mountains are the *Clinton, Roberts, Arizona, Atlanta, Yankee Boy, St. George, Hickory, Maggie Jane, Arbitrator, Maverick, Alpine, Burns, Little Hatchet*, and a few others of less importance whose names are not remembered.

### IRON AND COAL.

There are in these mountains, also, large leads of specular, red and brown hematite, magnetic, spathic, and micaceous iron ores. On the northwestern slope are immense veins of anthracite and semi-bituminous coal. With these large coal beds within a few miles of such valuable leads of the precious metals, to say nothing of the large and varied deposits of iron ores, who can foretell the prosperous future of this wonderfully-famed section?

### OUTPUT WHEN WORKED.

The gold, silver and copper product of this district in 1882, principally by the San Pedro works, a 30-ton smelter and 25-stamp mill, estimated, will not fall far short of gold, $20,000; silver, $10,000; copper, 150,000 lbs., metallic 95 per cent.; and 250,000 lbs. mat, 60 per cent. The copper output during 1881 was some 250,000 lbs., metallic 95 per cent.

After reading the foregoing, one naturally reflects thus: If all this be true, or even partially so, how in the name of ordinary business foresight has so much wealth lain comparatively dormant and unproductive these many years? The answer is very simple, and well understood by those who have taken the pains to investigate, and can be expressed in three words, "Fraudulent land grants." The digression incident to this subject should be pardoned, for agitation begets investigation, and the situation here once fully understood by the powers that be, this section may eventually find relief.

To repeat: Of the mines above mentioned that are not included in litigation—of "fraudulent land grants"—there may be included the west half of the New Placers, the San Ysidro Mountains, the Oro Cue and Pine Tree Gulches, and the east end of the Tuerto Mountains. It is due to the truth, also, to say that the last named districts include some of the finest mining properties in the Territory, and should not in any sense be confounded or thought of in connection with the grant complications.

### TIN.

Tin-bearing ore of a low grade is found in the foot-hills back from Santa Fe, and gives promise of a percentage that warrants reduction.

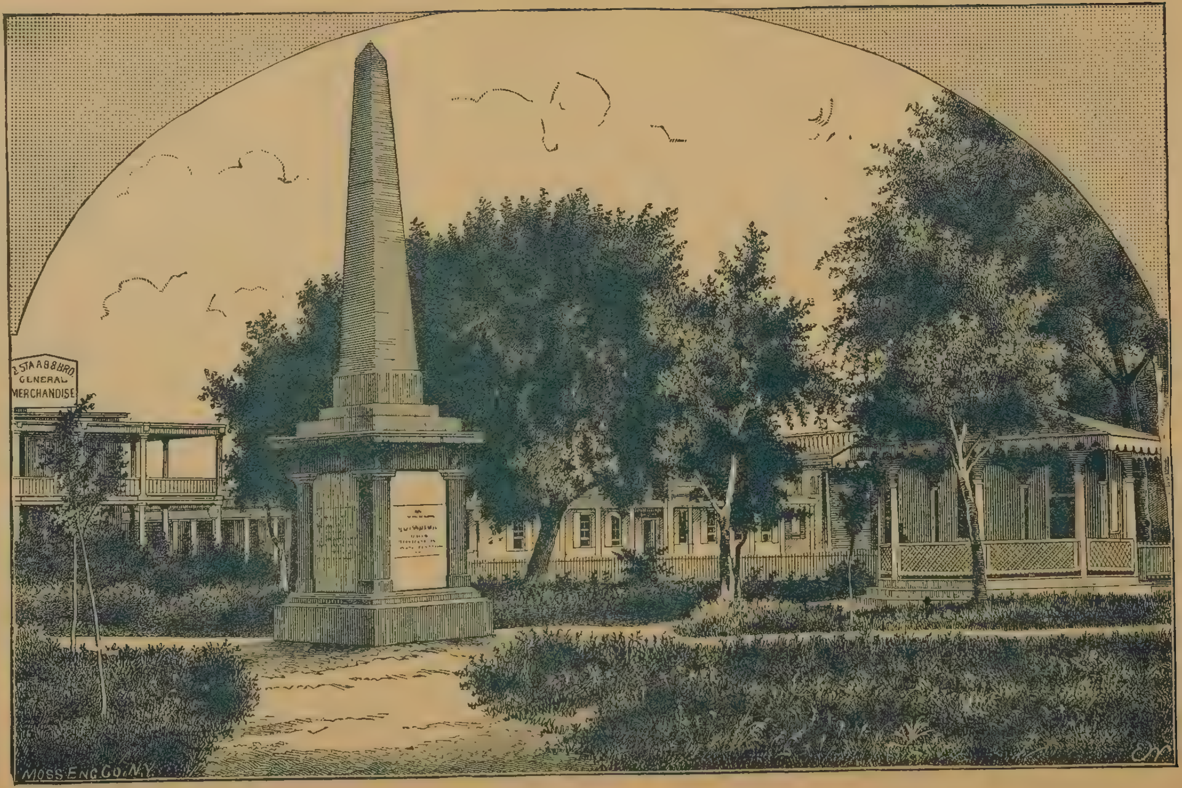
### MICA.

The mica mines in the vicinity of Nambe, in Santa Fe county, have been developed to a point where the yield is ample for profitable working. The manager of the Mansfield company announces the shipment of seueral lots. Recent discoveries give promise of other large bodies of merchantable value from the surface down.

## PECOS RIVER DISTRICT.

BY R. A. VARDEN, MINING ENGINEER.

In the latter part of the year 1881, mineral was first discovered in the upper part of the Pecos valley. Specimens of exceedingly rich copper ore were brought into Santa Fe by Mr. J. W. Cooper, the pioneer settler in this region, for examination. The ore proved to be copper glance, containing 56 per cent. of copper, besides gold and silver. Samples of a second grade of ore were submitted to the assayer for examination at the same time, which showed upwards of $40 in gold, silver and lead, exclusive of the zinc, which was present in large quantities. The vein is about thirty feet wide, nearly all of which is solid ore. The walls are granite and limestone, but further developments must be made before a definite opinion as to the character of the deposits can be made. The Pecos River Mining Company has since been formed and the mines explored and developed to some extent. Thus far the results obtained have proved highly encouraging, for a large body of ore has been proved to exist beyond doubt, and now all that is necessary is suitable machinery for its reduction, in order to repay the stockholders for this outlay. The mines are equipped with steam-power drills, hoisting engine, and all necessary buildings. Considering that this property is situated in the midst of a magnificently timbered region, close to the Pecos river, from which an almost unlimited supply of water for power and other purposes can be obtained, this camp should have an encouraging future before it. The town of



CENTRAL PLAZA, SANTA FE.

Hamilton is located at the mines; distance to main line of A. T. & S. F. R. R. eighteen miles, by a good wagon road.

In addition to the Pecos River Mining Company's property, numerous prospects of gold, silver and copper have been found near the Pecos river, none of which, however, have been worked to any extent. Coal and iron have also been discovered, and will some day undoubtedly prove of great value. Building stone, limestone and clays of various qualities exist in abundance all along the banks of the river.

The mountains in the vicinity of Glorieta have been filled with prospectors since the completion of the railroad, and numerous promising veins have been discovered, showing paying quantities of gold, silver and copper. Here, as in so many districts, the lack of capital has prevented any extensive work being done. Glorieta is situated on the Atchison, Topeka & Santa Fe railroad, from which the mines are distant but a few miles, in localities well supplied with wood and water.

Gray's copper camp, about nine miles south of Santa Fe, has produced some good ore, a quantity of which was sold to the Santa Fe Smelting Company, but was not treated, on account of the works being destroyed by fire shortly after the ore was purchased.

## "JUMBO"—TRADITION VERIFIED.

Prospecting in the foot-hills immediately adjacent to the city has heretofore almost uniformly been attended with unsatisfactory results. Fine specimens of almost everything known to mineralogy have been found, including the precious metals, assaying away up into the hundreds of dollars to the ton; one find of gold-bearing rock ran $1,200 to the ton. This prospecting, unfortunately, has been confined to a section of disturbed strata passing northeast of Santa Fe. Much development has been done from time to time, only to discover in the end that the outcropping and its surroundings were part of a broken and mixed mass, resulting from some powerful upheaval. Within the past year, however, at a point one mile to the southeast of the latter, and about four miles east of Santa Fe, near the canon, there has been discovered a well-defined vein of quartz and feldspar from six to eight feet in width, with pay-streak from two to four feet, carrying gold and silver, and easily traced in the outcroppings for one thousand feet, running northwesterly and southeasterly. The fissure has been cut at two points 400 feet apart; the northwesterly cut is down thirty-five feet, the other about four feet. The vein dips to the northeast, and is in a solid wall-rock of granite and gneiss. It lays in kidney-shaped masses in close contact, and is a true fissure vein. Assays of gold and silver are reported ranging from $4.60 to $20.00.

The discovery was made by Mr. W. V. Brown, of Santa Fe, a practical miner, and has been located by him and called "Jumbo." This discovery is here made the subject of special mention to correct the false impression which has gained considerable currency, conveying the idea that the whole mountain country adjacent to Santa Fe was an upheaved and broken country, and that there were no well-defined formations.

The vein bearing the above discovery, upon comparison of the formation, extends into and across the mountains to the southeast of the city. Then again the upheaved section of the vein carries a like character of rock, and a vein, supposed to be the same, has been discovered fifty miles to the northwest.

Tradition, the remains of old Spanish smelters in and about Santa Fe, with fragments of gold-bearing ore scattered about, and the continual finding of choice specimens in the broken and mixed section carrying the precious metals, have maintained a belief among the more experienced that good mines of gold and silver existed in the vicinity of Santa Fe. The "Jumbo" would seem to be a fact supporting the belief. But few other locations and and no additional development have been made as yet; indeed the discovery and development of the "Jumbo" mine has been quiet and unpretentious. The facts presented only came to the knowledge of the writer as this report was going to press.

## SANTA FE COAL FIELDS.

BY ARTHUR BOYLE, SECRETARY OF THE BOARD OF TRADE, SANTA FE.

### CERRILLOS ANTHRACITE.

About twenty miles south of the city of Santa Fe are situated the Cerrillos coal fields, which at no distant day will form a great source of wealth to the county. The anthracite coal there mined already has a reputation from Kansas City to the Pacific as the best coal found out of Pennsylvania. They are 10,000 acres or more in area and are covered with igneous rock. The seams of coal, so far as known, are nine in number, one above another, separated by layers of fire clay or metamorphic slate, and vary in thickness from two to five feet.

ANALYSIS OF CERRILLOS ANTHRACITE COAL.

| | |
|---|---|
| Water | 2.10 |
| Volatile combustible matter | 6.63 |
| Fixed carbon | 86.22 |
| Ash | 5.05 |
| Specific gravity, 1.45. | 100.00 |

The coal strata are easily traced in one continuous bed through Cañon de los Ojitos, Cañon Chupadera and Cañon de la Chapina, the croppings extending over an area of fully 20,000 acres. Island-like hills of primitive and volcanic rocks jut out through the sedimentary beds. The seam of anthracite now being mined gives four feet of excellent coal, and it is worked from a tunnel five hundred feet in length, carried in on the strike, with a sufficient outward grade to run out the loaded cars by gravitation.

This mine was worked by the Spaniards two centuries ago, and the coal, no doubt, used in smelting the silver and copper found in the vicinity. It is known locally as the "Old Spanish coal mine."

The anthracite coal is broken by hand to egg size, and finds a market, in preference to all other coals, in the principal towns of the Territory, and at a price in advance of that asked for the other coals.

It was used by the San Pedro Copper Company, until closed down recently by litigation, with coke, in the proportion of half and half, the result being a great saving, and most satisfactory.

There is an abundance of rich silver-bearing copper ores and of flux near this fuel. The opportunities are most favorable for large profits to any company that would work the mines for what they are worth, and not for the stock market.

### BITUMINOUS COAL BANKS.

Adjacent to the above anthracite fields are the bituminous coal banks, which cover over 20,000 acres on the north bank of the Galisteo river. The seams appear to be seventeen in number, the size varying from one to six feet. The coal ranks very high for its calorific properties, and is placed fifth on a list of thirty varieties tested by the War Department. It is 40 per cent. better than the famous Cañon coal—the standard of Colorado. The principal workings are near Waldo station, two miles on the A. T. & S. F. R. R. south of Cerrillos. The seam mined has averaged four feet in thickness from the surface, and is increasing as the entry advances. This mine is also worked on the level. The face is now nearly 1,000 feet in. Another seam four feet thick overlies these workings, which will in time be wrought from the same entry, thus doubling the capacity of the mine.

Coke of a very superior quality is made from the Cerrillos bituminous coal. It surpasses in density any other coke made in the Rocky Mountains. Analysis shows it to be equal to the best from Pennsylvania, or to the coke from Australia, at present largely used in Arizona and California.

The coal and coke trade of these districts is in its infancy. The mines are distant from two to four miles from the railroad, and thus are placed at a disadvantage. The local demand is small, and hitherto the greatest effort has necessarily been directed to making the unsurpassed excellence of the fuel known and creating a demand.

During the past two years about 4,000 tons of coal and 1,000 tons of coke have been marketed locally. With greater railroad facilities this market could be increased to that amount per month.

These fields are of unlimited capacity practically, and there is no natural cause nor good business reason why the coal mines of Santa Fe county should not form one of the leading industries of the Territory, and add to and support many thousands of population.

A notice of the Cerrillos coal fields would be quite incomplete without a statement showing the comparative value of the leading coals known to the commercial and manufacturing world, including that of Cerrillos.

### COMPARATIVE VALUES OF COALS

Tested by the War Department of the United States (see General Orders, Headquarters of the Army, No. 10, January 28th, 1882, and No. 3, November 26th, 1883.)

ONE CORD AVERAGE OAK EQUALS—

| ANTHRACITE. | *Pounds.* |
|---|---|
| Wales, Great Britain | 1,466 |
| Standard, Pa. | 1,521 |
| Other Pennsylvania | 1,573 |
| Forest Imp'ment, Richardson Comp'y. | 1,598 |
| Wilkesbarre, Pa., (Lehigh or Wyoming Valley) | 1,598 |
| Scranton, Pa., (Lehigh or Wyoming Valley) | 1,614 |
| Lykins Valley, Dauphin county, Pa | 1,651 |
| **Cerrillos Coal, New Mex** | 1,657 |
| Scranton, Pa., (Del., Lack. & W. R. R.) | 1,687 |
| Raven Run, Pa | 1,818 |
| Scranton coals, (not named) Pa | 1,841 |
| Locust Company, Northumberland, Pa. | 1,905 |
| Queen Charlotte, N. S | 2,626 |
| BITUMINOUS. | |
| Bituminous Coal, Pa | 1,624 |
| Monongahela Coal, Pa | 1,653 |
| Youghiogheny, Pa | 1,663 |
| Fawcett & Sons, Pittsburg, Pa. | 1,706 |
| Laird's Welsh Hartley Coal, Wales | 1,735 |
| **Cerrillos, New Mexico** | 1,742 |
| Westminister, Brymbo Welsh, Hartley, Wales | 1,742 |
| West Virginia Splint, W. V | 1,796 |
| Seeley Mines, Raton, N. M | 1,913 |
| Raton Coal Company, Raton, N. M | 1,951 |
| West Hartley, Wales | 1,993 |
| Scotch Splint | 1,970 |
| La Plata, Colorado | 2,000 |
| Davidson's West Hartley | 1,970 |
| Indiana Cannel | 2,046 |
| Manahaimo, Chase River, Vancouver Island | 2,070 |

| BITUMINOUS. | *Pounds.* |
|---|---|
| Cowpen's Gamboy's, West Hartley, Wales | 2,129 |
| Humboldt Mine, Belleville, Ill | 2,173 |
| Leavenworth, Kansas | 2,307 |
| Wellington Mine, Vancouver Island | 2,223 |
| Cañon Coal, Fremont county, Colo | 2,323 |
| White River Reservation, Colorado | 2,323 |
| Wasatch Mountain Coal | 2,406 |
| School Mine, Laredo, Texas | 2,380 |
| Chestnut Mine, Wyoming Territory | 2,466 |
| **Gallup Mine, New Mexico** | 2,489 |
| Rock Springs, Rocky Mountains | 2,491 |
| Saverz Creek, Snake River, W. T | 2,558 |
| Kennedy Coal Company, Lenzburg, Ill. | 2,397 |
| Mount Diablo, Cala | 2,592 |
| Coos Bay, Oregon | 2,626 |
| Bellingham Bay, Oregon | 2,641 |
| Eastport, Coos Bay, Oregon | 2,851 |
| Pittsburg, Mount Diablo, Cala | 2,965 |
| Fort Assinaboine, M. T | 3,221 |
| SEMI-BITUMINOUS. | |
| Pilsen Coal and Iron Company, Pa | 1,537 |
| Cumberland, Pa | 1,658 |
| LIGNITES. | |
| Seattle Brown Coal, Oregon | 2,450 |
| Weaver Summit, Utah | 3,168 |
| Fort Keogh, M. T | 3,508 |
| Fort Stevenson, D. T | 3,712 |
| COKE. | |
| Nanaimo, Vancouver Island | 2,164 |

From the above it will be seen that the coals from the coal mines at Cerrillos, New Mexico, stand high on the list of the coals of the world.

The **Cerrillos anthracite** is a little more than two per cent. below the best Scranton anthracites of Pennsylvania, and is eleven per cent. above the ordinary anthracites of Scranton, Pennsylvania.

The **bituminous coal of Cerrillos,** New Mexico, is seventh on a list of thirty-five varieties that have been tested by the War Department, and is better than any of the coals quoted west of Pennsylvania.

So far no coking coal has been discovered on the line of the Atlantic & Pacific railroad west of Albuquerque, the coal field at Cerrillos being the nearest point of supply for fuel for smelters on the line of that road.

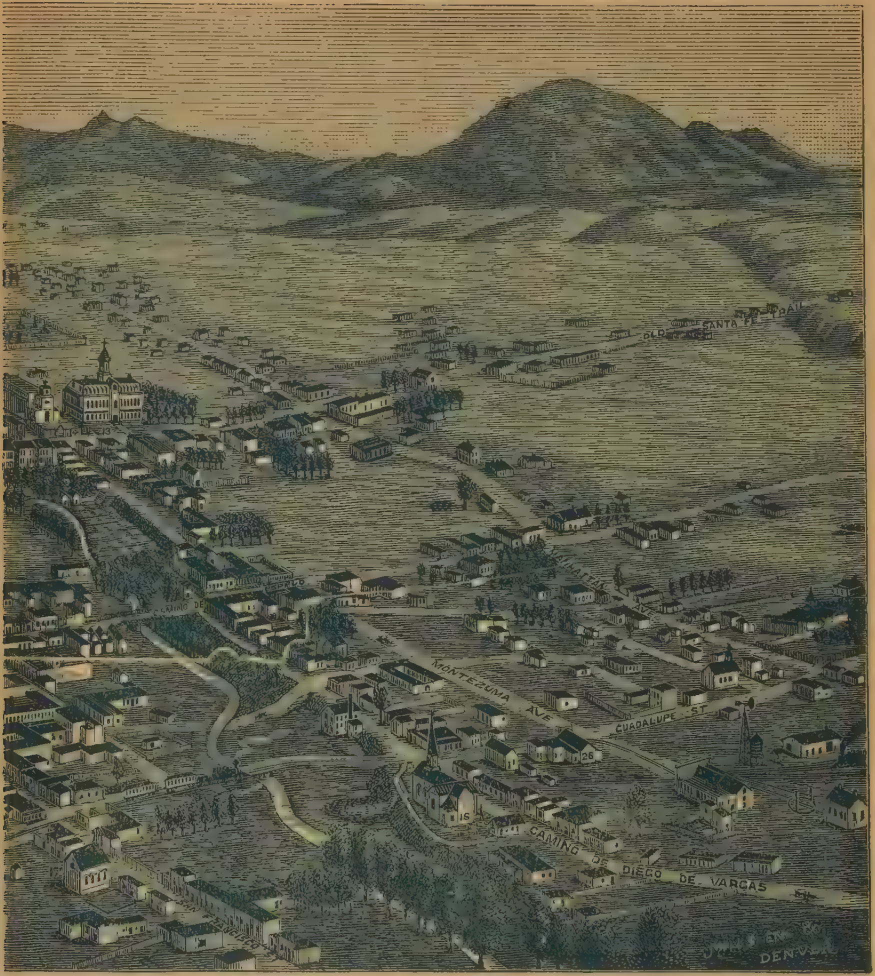
An examination of the foregoing tables will show that if the coal can be put on the cars at Cerrillos at the same price as it can at Gallup, (say $1.50 per ton,) and that the freight is the same per ton per mile from Cerrillos as it is from Gallup, (say one cent per ton per mile,) that, at 424 miles west of Albuquerque, the Cerrillos anthracite, and at 489 miles west of Albuquerque, the Cerillos bituminous would be cheaper for transportation west than the Gallup coals, (although Gallup is 157 miles west of Albuquerque on the A. & P. R. R.,) so that it is safe to say that the Cerrillos coal field will of necessity control the coal trade on that road (the A. & P.) west of the points above indicated.

## RELATIVE HEATING POWER OF CERRILLOS COALS.

Or to put this in another shape, the following table shows in the column headed "Anthracite" the number of pounds of coal of each mine named, which is required to equal the heating power of 1,000 pounds of Cerrillos anthracite coal. And in the column headed "Bituminous" the number of pounds of each mine named to equal the heating power of 1,000 pounds of Cerrillos bituminous coal.

RELATIVE HEATING POWER OF CERRILLOS COALS.

| NAMES OF ANTHRACITE COALS. | POUNDS OF COAL NAMED EQUAL TO 1,000 POUNDS OF | |
|---|---|---|
| | *Cerrillos Anthracite.* | *Cerrillos Bituminous.* |
| Queen Charlotte, Nova Scotia | 1,621 | 1,542 |
| Locust Mount, Northumberland County, Pennsylvania | 1,151 | 1,093 |
| Scranton Coals, not named | 1,110 | 1,053 |
| Raven Run, Pennsylvania | 1,097 | 1,043 |
| Scranton, Pa., Delaware, Lackawanna & Western R. R. | 1,118 | 996 |
| Licking Valley, Dauphin County, Pennsylvania | 996 | 970 |
| Scranton, Pennsylvania | 975 | 948 |
| Wilkesbarre, Pennsylvania | 964 | 939 |
| Forest Improvement, Schuylkill County, Pennsylvania | 964 | 939 |
| Other Pennsylvania | 949 | 924 |
| Standard Pennsylvania | 918 | 893 |
| Wales, Great Britain | 884 | 861 |
| NAMES OF BITUMINOUS COALS. | | |
| Fort Assinaboine, Montana Territory | 1,904 | 1,849 |
| Pittsburg, Mt. Diablo, California | 1,789 | 1,712 |
| Eastport, Coos Bay, Oregon | 1,720 | 1,636 |
| Bellingham Bay, Oregon | 1,594 | 1,526 |
| Coos Bay, Oregon | 1,585 | 1,507 |
| Mount Diablo, California | 1,564 | 1,487 |
| Saverz Creek, Snake River, Wyoming Territory | 1,543 | 1,488 |
| Rock Spring, Rocky Mountains | 1,505 | 1,481 |
| **Gallup Mine, New Mexico** | **1,502** | **1,429** |
| Chestnut Mine, Wyoming Territory | 1,488 | 1,415 |
| Wasatch Mountain Coal | 1,452 | 1,380 |
| Kennedy Coal Company, Lenzburg, Ills. | 1,446 | 1,376 |
| School Mine, Laredo, Texas | 1,436 | 1,362 |
| White River Reservation, Colorado | 1,403 | 1,233 |



Miguel Cemetery. El Atalaya.
Bishop's Garden. Camping Ground U. S. Army, Aug. 18, 1846. Santa Fe Trail.
. San Miguel Church and College. Rio de Santa Fe.
Territorial Penitentiary.☞
Congregational Church.
rn R. R. Guadalupe Church. A. T. and S. F. R. R. Depot.
Methodist Church. U. S. Indian School. (Gov. Vigil Place.

## EW MEXICO.

*Presented by the Bureau of Immigration, New Mexico.*

RELATIVE HEATING POWER OF CERRILLOS COALS—*Continued.*

| NAMES OF BITUMINOUS COALS. | POUNDS OF COAL NAMED EQUAL TO 1,000 POUNDS OF | |
|---|---|---|
| | *Cerrillos Anthracite.* | *Cerrillos Bituminous.* |
| Cañon Coal, Fremont County, Colorado | 1,403 | 1,333 |
| Leavenworth, Kansas | 1,392 | 1,324 |
| Wellington Mine, Vancouver Island | 1,342 | 1,276 |
| Humboldt Mine, Belleville, Ills | 1,305 | 1,242 |
| Cowpen's Gamboys, West Hartley, Wales | 1,285 | 1,222 |
| Nanaimo, Chase River, Vancouver Island | 1,249 | 1,188 |
| Indiana Cannel | 1,234 | 1,172 |
| La Plata, Colorado | 1,207 | 1,148 |
| West Hartley, Wales | 1,203 | 1,144 |
| Davidson's West Hartley | 1,189 | 1,129 |
| Scotch Splint | 1,189 | 1,129 |
| **Raton Coal Company, New Mexico** | **1,177** | **1,123** |
| **Seeley Mine, Raton, New Mexico** | **1,154** | **1,098** |
| West Virginia Splint | 1,080 | 1,032 |
| Westminster Brymbo, West Hartley, Wales | 1,052 | 1,000 |
| Laird's West Hartley, Wales | 1,047 | 996 |
| Fawcett & Sons, Pittsburgh, Pa | 1,030 | 979 |
| Youghiogheny, Pa | 1,003 | 955 |
| Monongahela, Pa | 997 | 949 |
| Bituminous Coal, Pennsylvania | 981 | 932 |
| NAMES OF SEMI-BITUMINOUS COALS. | | |
| Cumberland, Pennsylvania | 1,001 | 952 |
| Pilsen Coal and Iron Company, Pennsylvania | 927 | 882 |
| NAMES OF LIGNITES. | | |
| Fort Stevenson, Dakota Territory | 2,240 | 2,141 |
| Fort Keogh, Montana Territory | 2,127 | 2,014 |
| Weaver Summit, Utah | 1,911 | 1,860 |
| Seattle Brown Coal, Oregon | 1,479 | 1,407 |
| NAMES OF COKE. | | |
| Nanaimo, Vancouver Island | 1,300 | 1,236 |

# AN ABORIGINAL CIVILIZATION AND ITS MODERN CONTACT.

BY W. G. RITCH.

[Referring to the American continent, Hugh Miller, the great English savant, says that this land, geologically speaking, was the first to lift its headlands out of the weary waste of waters. There are others who assert that the oldest civilization was on this continent; that there was a people here with arts and sciences and culture, gray with antiquity, when our forefathers were barbarians in the woods of Germany.]

The pre-Columbian inhabitants of New Mexico, who numbered many thousands, and were found in the sixteenth century by the first Spanish explorers, centered largely in and around the area known to-day as the county of Santa Fe, constituted a people possessing, as their descendants also do, many of the characteristics, environments and habits of civilization. These people resided in permanent homes, in houses sometimes three and four stories in height, built of sun-dried brick or of stone, generally erected in compact form for mutual protection from the wild tribes, around plazas, one or more, located upon or near fertile valleys, and constituted the cities of which we are so frequently informed by the early historians and explorers.

The pueblo Indian, or aboriginal New Mexican, was industrious and tilled the soil, produced bread stuff, cotton and vegetables as a return for his labor.

He hunted in season the buffalo, deer and bear for their flesh and pelts, the latter of which was converted into "leather superior to that of Flanders," and then made into shoes and other articles of necessity. The cotton was spun and woven into cloth, and made into garments worn both by men and women.

### WHAT THE EARLY EXPLORERS SAID OF THEM.

Espejo, who in many respects confirms the characteristics of the people as reported by Cabeza de Vaca and other explorers who preceded him by nearly a half century, and whose word as a truthful narrator stands supreme, explored the country in 1583. Espejo says: "According to what we have seen, their energy and genius exceeds that of the Indians of Mexico." He also in brief testifies to their systematic and just local governments, to the neatness of the women in their persons and homes, and the hospitality of the race generally, to the extent of providing for him and his command, including forage, for several days at a time.

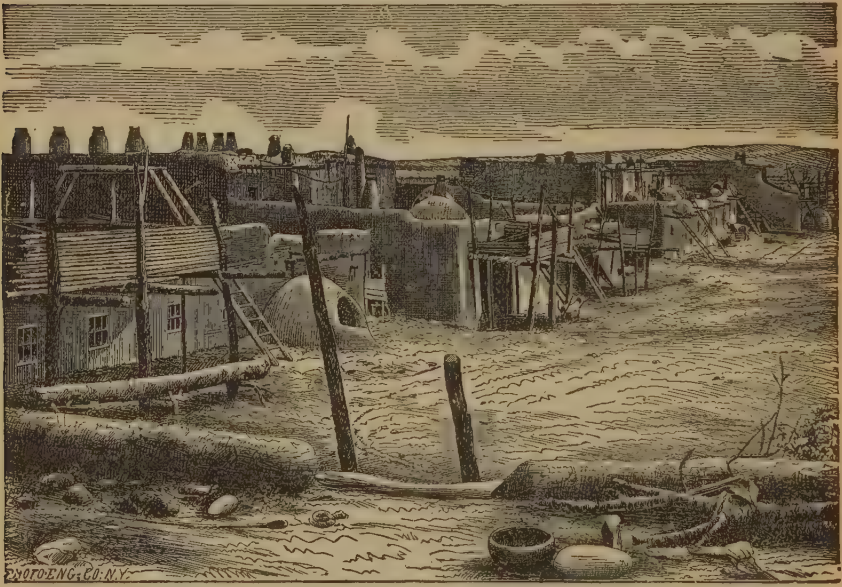


PHOTO-ENG. CO. N.Y.

ANCIENT PUEBLO OF TEZUQUI.

Juan de Onate, the first adalantade or governor, who under royal commission colonized Santa Fe city and county in 1598, writes with respect to the people he found as "all having well built houses; the people, fairly draped with mantas of cotton cloth, had plenty of game, such as buffalo and poultry, and all wore shoes in cold seasons."

Villanueva, a more modern writer of Mexican history, collating his facts from all the explorers and visitors preceding him, says of these people: "As has been noticed since the discovery of this country, their habitations are better constructed, and in the cultivation of the soil are more industrious, than found among the habitations and people of Old Mexico." Thus, in brief, it appears from the best authorities of the times that the people of New Mexico, of which Santa Fe in the pre-Columbian period, as well as now, was the center and capital, were essentially part of the advanced pre-European civilization of the western hemisphere.

## ANCIENT AMERICA.

Santa Fe was the center in influence of the northern outlying provinces in North America. Next in order came the provinces tributary to the city of Mexico, then those about Chiapas, Central America and Yucatan, and finally the southern outlying provinces centering about Peru in South America. Besides the numerous early Spanish writers who have contributed so largely to researches in the history and archæology of the old western civilization, there are many modern writers of repute. For the benefit of the reader who may desire to investigate, I will mention as prominent among the latter, and who have included the Santa Fe group in their researches, Humboldt, Kingsborough, Baldwin, Bancroft, Morgan and Shea. Of those who have made a specialty of the Santa Fe group may be named Gen. J. H. Simpson, U. S. A.; Hon. W. W. H. Davis, a former Secretary and Governor of New Mexico, and Lieutenants Emory, Abert, Ives and Macomb, respectively. The explorations made by the scientific expeditions of the Government were organized under the management respectively of Professors Hayden and Powell and Lieut. Wheeler, U. S. A., each of which, besides doing a large amount of work of inestimable value in the discovery of resources, has also opened up the way for individual effort.

Prominent in turn among the latter may be named Mr. F. H. Cushing, under the patronage of the Smithsonian Institute, and Prof. A. F. Bandelier, for the Archæological Institute of America. The work of Mr. Bandelier has much of it already appeared in print, and is familiar to the scientific world. His labor in the Santa Fe group has been particularly indefatigable, and one of love. Single and alone, many times penetrating inhospitable regions, beset with hostile Indians, and gathering both by observation and collections from the remains and monuments of the past. Being a thorough linguist in Mexican and Indian dialects, he also gathered the traditions and folk-lore still retained by a few of the old people, but rapidly dying out, by reason of the absence of ancient provincial or tribal association. The institution with which he is so honorably connected will no doubt see that the Bandelier collection is individualized, and made to stand permanently, both as a monument to science and to the honor of its collector and author.

Next to the pre-Columbian groups, in historical order, are the narrations of the intrepid explorers, dating from Cabeza de Vaca early in the sixteenth century, down to the general colonizing and missionary scheme of Onate, late in the same century. The earlier of these narrations tell of their search for the famed "seven cities far to the north," and of the fabulous amounts of gold and silver there to be found, as in Peru by Pizarro, and in Mexico by Cortez, ready wrought to the grasp of the strong. Those who came later, and learned the apocryphal character of these reports, were sorely disappointed when they found only the mines abounding in precious metals in place, ready only for the hand of industry and skill.

## PERILS OF THE EARLY FRANCISCAN MONKS.

Contemporaneous with explorations and emigration came the missionaries of the Roman Catholic Church. The region was very remote and beset with perils of a most trying nature. The work of the Franciscan fathers, the sole missionary representatives of those times, was wonderful in its severe sincerity and persistent effort to obey the commands of the Great Teacher, to "preach the word, be instant in season and out of season, rebuke, reprove, exhort, with all long suffering and doctrine." The repelling influences, the difficulties attending conquest followed by stability in that most remote country, were simply appalling. For centuries the country had been possessed by a numerous people having simple tastes, fixed habits and habitations, who were industrious and provident; lived under just laws, justly administered; and had a system of worship which, however "heterodox and idolatrous,' there is no reason to doubt the sincerity of its devotees. It was sacred to the Pueblo Indians in that it was the religion of their ancestors, was the religion of a people who, in their repeated rebellions and wars with the Spaniards, running almost continually through the seventeenth century, gave substantial evidence that they were a proud, patriotic, conservative and brave people, who loved liberty, were willing to fight for it, and did fight for it to the bitter end with the best of their resources and skill in the art of war. A change of religion in the nature of things was insuperably objectionable to their conservative natures, and when aggravated by the Spanish policy of permitting the native races to be reduced to human slavery, (and so righteously preserved to history by Las Cases,) the logical outcome was implacable hostility. Revolution followed, which culminated in the great Pueblo Indian rebellion of that fatal

### "FIRST MOON IN AUGUST, 1680,"

when every priest was sentenced to death, twenty of whom were killed, numerous churches and convents burned, many Spaniards pursued to the death, and every Caucasian, to save his life, had to abandon the country in the general hegira of the period to El Paso del Norte.

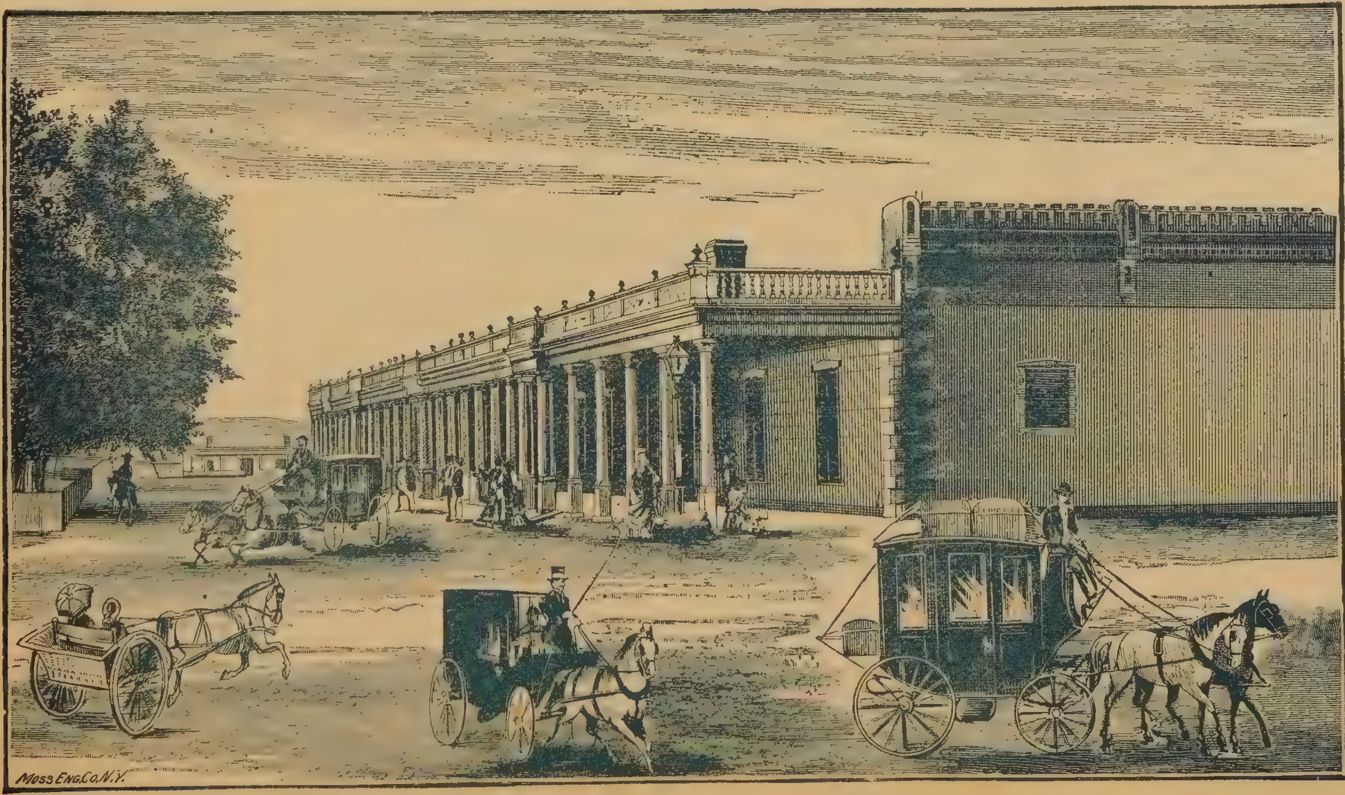
A series of failures to reconquer the country then followed, variously under Otermin, Ramirez, Cruzate and Posada, up to 1692, at which date, under the superior military arms and diplomacy of the Spaniards, headed by Diego de Vargas, and favored by divided council among the Pueblos, their efforts resulted in the recovery of a foothold. Thereafter, and up to the republic of 1821, Spanish authority remained supreme, but not without hostile demonstrations more or less formidable, running through several years immediately following, and until concessions were made in the abandonment of the mines and doing away with their tyrannous edict of the *mitaor*, reducing the Indians to slavery.

### NATIVE STATESMANSHIP.

The founding of the Mexican republic upon the ruins of the viceroyalty of New Spain was attended with much anarchy and revolution, until the strong administrations of the past few years, having Benito Juarez and Porfiro Diaz, respectively, President of the republic. It may be regarded by some as a singular fact, but it is none the less a fact, that each of these Presidents was a native Mexican, or in other words akin to the Pueblo Indian of New Mexico. President Juarez was a full blooded-Indian, and withal was a statesman in the full sense of the word. It was he who first brought order out of chaos, as known to the constitutional government of the republic of Mexico; who had the tact and strength to gather around him the forces, and ability to command the army, which drove French bayonets from the soil of the republic, and utterly defeated the tripartite efforts of the great European powers to plant an Austrian prince upon an imperial throne in Mexico. Diaz, who possesses only a trace less of the Indian blood, was a lieutenant of Juarez. His administration followed with like success; and a stability which made his administration doubly historic in the completion of

### DIRECT ALL RAIL COMMUNICATION

between the two ancient cities, Mexico and Santa Fe. A similar recognition of the executive ability of the native Mexican in New Mexico has occurred at least twice. First in 1692, when Diego de Vargas, the hero of the reconquest, found himself 1,500 miles from his base of supplies, and the situation demanding his return to Old Mexico, he appointed "Don Luis Tupatu, the Picori," as "governor of said kingdom" during his absence. Vargas was absent nearly a year. Tupatu proved both true to the trust and able to govern. Next, after the revolution of 1837, which resulted in the killing of all the civil officers, a mass meeting of citizens was held at the palace, and Jose Gonzales of


Moss Eng.Co.N.Y.

OLD ADOBE PALACE.—SPANISH GOVERNMENT HOUSE, SANTA FE. (ERECTED EARLY IN 17TH CENTURY.)

Taos was elected provisional governor, who served as such for about six months, and until superseded by Manuel Armijo, in a counter-revolution.

Such was the character of the people and the

CONDITIONS CONTEMPORANEOUS WITH THE MISSIONARY EFFORTS of the early Franciscan monks in New Mexico. They came clothed in simple monastic habits, *libro de devociones* in hand, were content with simple fare, but which was not plenty at all times; and thus took upon themselves the conversion of a people inimical to them, as we have seen. While at times apparently acquiescing, all the same the Pueblo as a rule remained hostile. The first appearance of the priest as a proselyter was two Franciscans, who came with Coronado in 1540, and who remained only to suffer death at the hand of the Pueblo.

FRANCISCAN MONK OF NEW MEXICO, SIXTEENTH CENTURY.
(Libro de Devociones en ma[illegible]) no

The next missionaries to come to New Mexico of which there is record were Fra Augustin Rodriguez and his two companion priests, who came in 1582 to that portion of the Rio Grande valley situate in Bernalillo county and north. They came accompanied by a small escort, which however soon abandoned them. The following year Espejo came in search of the priests, only to find that they too had suffered a like fate of those who came forty years before. Franciscan biographies are full of accounts giving a like fate of the priesthood all along down the Spanish occupation for two centuries, including the wholesale slaughter of 1680, heretofore given. Scarcely a year passed but what was marked with violence, if not in the death of a priest, official or civilian, then in the sanguinary edicts of the inquisition, which was early introduced, but did not have its first celebration by order of the "Santo Oficio" until 1662. From this time on its enforcement against the "apostate Indians" was frequent and sanginary. The old San Miguel church or "hermitage," at Santa Fe, which was burned (as many churches and convents throughout the Territory were also burned in 1680), but since rebuilt, is a monument of the times.

## SANTA FE.

Poga, Apoga, Analco, Tegua, Teguayo and El Teguàyo are names variously given in old documents and tradition to the group of ancient Indian pueblos at Santa Fe; and which once, according to the report of traditions given by an early Superintendent of Indian Affairs, constituted the center of operations or seat of the supreme councils of the confederated pueblo Indians occupying New Mexico. El Teguayo, according to Shea, was the seat of the first mission and of the first church erected in the territory. There is a tradition of "Montezuma the great monarch," who is reputed to have said: "I command this province, which is the first of Aztlan, the pueblo of Teguayo, which governs one hundred and two pueblos. In this pueblo there is a great mine near by, in which they cut with stone hatchets the gold of my crown." At Santa Fe are to be found the remains of old smelters, with fragments of gold-bearing ore scattered about.

"Analco" was first of the places named by the commandant of the military department including New Mexico, from which to select the location of the permanent presidio or military fort and headquarters for New Mexico, and represents the spot where it was located. Living Indians of to-day variously tell of a tradition that one of the pueblos or plazas of Santa Fe was known as "Poga" or "Apoga," which signifies in the Tegua or Tanos language (the language of the Indians whom Diego de Vargas records as the dwellers in Santa Fe) a lake having or bearing shells. The reader who has visited or examined carefully the borders of the little lake in the Ciennega has no doubt found fresh water shells, as others have to a certainty. Of more immediate interest is the live-present-in-place evidence of the Spanish occupation,

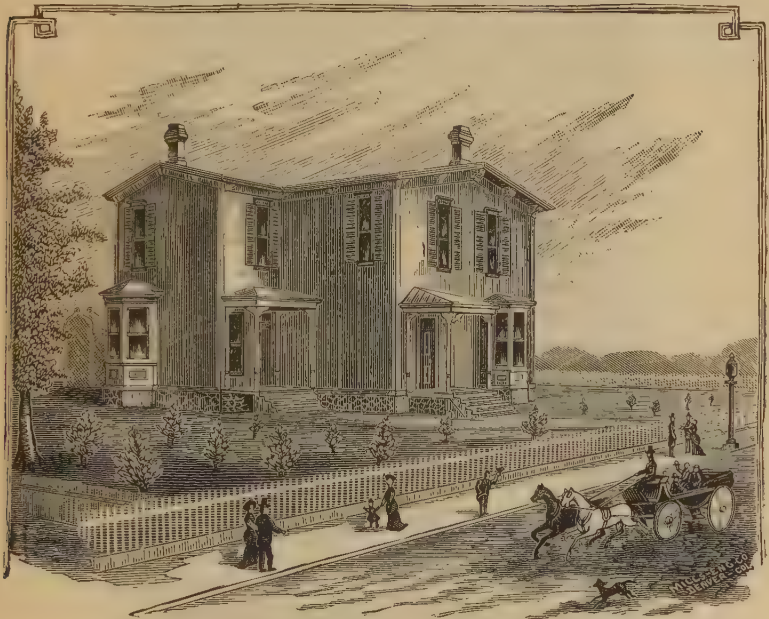
## THE OLD SPANISH CITY OF SANTA FE,

with its grand plaza of old trees standing like sentinels beneath the same sun that shone upon the same spot when visited three centuries ago by old Friar Rodriguez. The visitor of to-day comes without passport, without the servile shadowings of a foreign police, without askance from any authority, and walks abroad to enjoy alternately the bright and exhilarating sunshine and quiet shade. If at twilight he can listen to the daily free concert of the military band from the pagoda, and speculate upon the many events, civil, religious and military, which have transpired, if not upon the very spot where he is seated, then near; to meditate upon the conditions which prompted the burning of the old government archives and church vestments upon that memorable "full moon;" to view with more pleasurable emotions the monument, sacred to the memory of the soldier and patriot dead, and glance possibly with a sense of increased security upon the headquarters of the army in New Mexico, from whence, in conjunction with the executive office, proceeded the orders which forced a settlement of the Indian question.

Looking all about, your companion points out the old Santa Fe trading establishments or depots of the caravans in the Santa Fe trade; the latter made memorable to the small boy of half a century ago in the illustrations then used in his geography and historical reader. Finally, looking toward the north, you see fronting upon the broad side of the plaza

### THE OLD ROYAL PALACE

or government house, with its one-story adobe walls four feet in thickness. It is probably the oldest remaining public building still occupied for government purposes upon the continent; certainly the oldest public building, occupied or unoccupied, within the United States. This old palace, the only palace known as such in the land, was seared with age before Europeans ascended the Alleghany Mountains. Like the venerable capital city, of which it is still the venerable capitol building, it is all covered over and piled up with the dust of historic lore. Here have resided nearly continuously the long line of governors and captains-general of "this kingdom and province of New Mexico." Here have been received royal visitors from Spain, citizen officials from Mexico, and distinguished visitors in every department of civil and official life at home and abroad, including President and Mrs. Hayes and party, and Generals Grant, Sherman and Sheridan and staffs; here have been promulgated royal edicts and republican laws; here have issued declarations of war, of conquest and reconquest, and treaties of peace negotiated; here prisoners and captives have been turned over under official orders to the tender mercies of the inquisition; here have people been incarcerated with and without offense (among the number


MILLS ENG. CO. DENVER, COL.

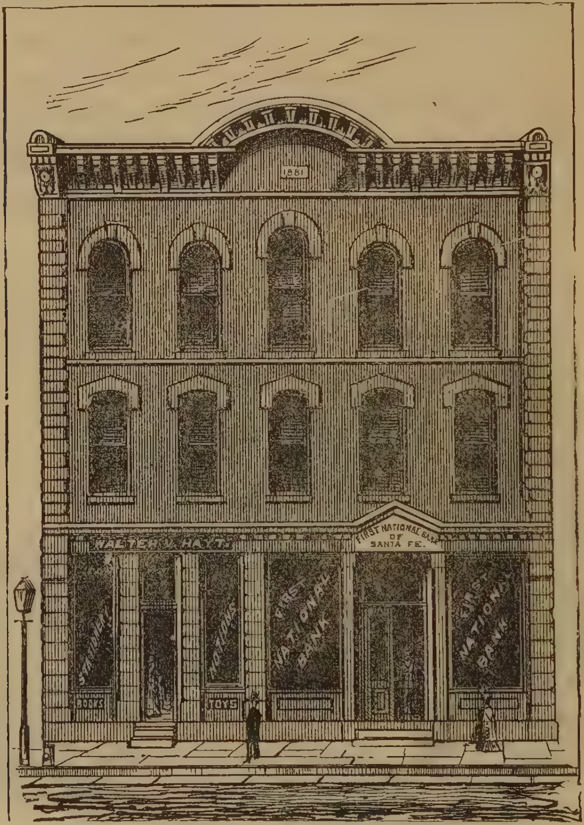
RESIDENCE OF GEN. G. A. SMITH.

### CAPTAIN PIKE, THE FIRST AMERICAN EXPLORER

upon the headwaters of the Rio Grande, also Merriweather and Vigil, each of whom subsequently became governor of New Mexico); here have been witnessed suffering, famine and starvation, and the absence of the people in exile for years by reason of Pueblo supremacy; here people from outlying settlements sought refuge from Indian raidings and rapine, and protection for flocks and herds and property liable to wanton destruction. And finally, right here, in the year 1846, in this same "old royal palace," came General Kearney and a few United States troops, and without shedding a drop of blood or firing a musket, came (can I not say) with

THE WHITE-WINGED MESSENGER OF PEACE,

notwithstanding that he bore the insignia of war, and issued from within its portals his proclamation of good will and occupation in the name of the republic, offering the protection of a strong government, with stability and liberty to all the people. The blessings of this messenger of peace to-day, and for many years past, have been apparent upon every square mile of this grand old Territory. Anarchy and local revolution have been unknown to the people ever since the treaty of Guadalupe-Hidalgo. Where hostile Indians roved a few years since, are now found prosperous mining and live stock camps, and flourishing cities and towns, and



FIRST NATIONAL BANK, SANTA FE, NEW MEXICO.

### AN ENLIGHTENED AND ENTERPRISING POPULATION.

The old towns have revived and quadrupled their numbers. Institutions of learning, of charity and religion, have been and are being erected, and the hum of trade and industry is abroad. Railroads have been constructed to within convenient reach of nearly every portion of the Territory of which Santa Fe is to-day the capital and chief center of commerce, education, ecclesiastics, military and business. The old walled city of Santa Fe, as known to the early Spanish occupation, with its ramparts and parapets, its towers, merlons and embrasures, its narrow, meandering streets and strong gates, its many-storied communal houses and churches, and walled convents and stores and warehouses and military barracks and bastiles and old government palace, all built of adobe bricks and adobe mortar, are still traced under the impress of centuries. Since the supplanting of the

### PRAIRIES SCHOONER AND THE SANTA FE TRAIL

with palace cars for cattle, as well as Pullman cars for humans, upon a steel trail, the old city has been receiving many enterprising additions of modern types, including water and gas works (not to mention human gas,) telegraph lines and telephones, lightning calculators and Kentucky aguardiente, all the more apparent from the contrast. Modern Santa Fe has already present, erected and completed, its grand hotel, its cathedral, churches of various denominations, its hospitals and convents, new banking houses and business blocks, manufacturing establishments, edifices of learning and charities, and a few palatial residences, all set in modern architecture, all built since the coming of the railroads, and all of which impress the rapidity of the transformation.

### A NEW CAPITOL BUILDING AT THE OLD CAPITAL CITY.

The last Legislative Assembly, probably the last to meet in the old palace, authorized the erection of a new capitol building and a penitentiary, both of which have been located at the old capital city, and both of which are or will be in course of erection when this paragraph meets the eye of the reader.

---

## ANCIENT PUEBLOS IN AND ABOUT SANTA FE.

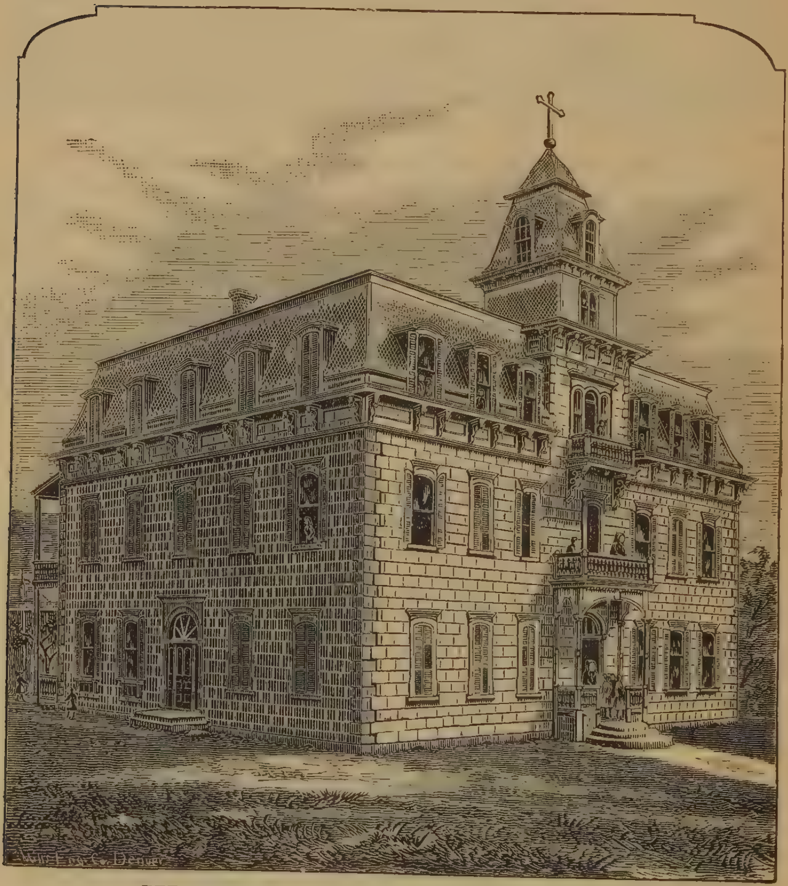
The following letter has been kindly furnished for publication by Prof. A. F. Bandelier, of the Archæological Institute of America:

Fort Huachuca, A. T., February 15, 1884.

*Hon. W. G. Ritch, Secretary of the Territory of New Mexico, Santa Fe, N. M.:*

Dear Sir—Agreeably to your wishes, I herewith submit to you a rapid and imperfect sketch of the aboriginal ruins scattered over the county of Santa Fe. This sketch must of necessity fall short of completeness, since all my material is far beyond reach, and my journeyings through the county have not carried me everywhere. I beg therefore to offer this as an apology for the defects which may abound in my statements.

In "assorting" the ruins, the first division to be made is between such villages as are known to have been occupied in the sixteenth century, and such, of which no documentary records are left, which consequently were already abandoned previous to 1540. The former show but one common type: that of the many-storied, communal, "pueblo" house, still in use to-day among the sedentary aborigines of New Mexico. The latter embrace two types—the one already alluded to, and the detached family-building, forming scattered villages. The cave-sheltering constructions represent only modifications of either of the two patterns.



THE ACADEMY OF OUR LADY OF LIGHT, SANTA FE.
(Convent of the Sisters of Loretto.)

At the time of the first Spanish colonization (1598), and previous to it, when the transient Spanish explorers under Coronado (1540–43), Francisco Sanchez Charnuscado (1580), Espejo (1583), Gaspar Castaño de Sosa (1590), traversed portions of Santa Fe county, three distinct groups of sedentary Indians dwelt on parts of its area. These were: the "Queres" on the west, the "Tanos" in the south, and the "Tehuas" in the north and center. The latter two spoke but dialects of a common stock-language.

The Queres inhabited, until after 1689, the site of the Ciénega or Ciéneguilla, on the Peña-Blanca road. Their village there, now almost obliterated, was called "Chi-mu-a." It was the easterly outpost of the great Rio Grande branch of the tribe.

The Tanos villages are completely deserted to-day, the tribe having removed mainly to the Moqui after 1694, and the last remnants here dying out with small-pox in the early part of this century. The ruins of "Galisteo," (not the actual village, but the remains one and one-half miles northeast of it—north of the "Creston,") of "San Cristóbal," "San Cázaro," and "San Marcos," also in all probability those at the "Garita," in the city of Santa Fe, belonged to that tribe. Their aboriginal names are unknown to me, except that of the Santa Fe pueblo, which was called "Po-o-ge." The pueblo of the "Tuerto," near Golden City, and that of the "Tunque," opposite Santo Domingo and San Felipe, were also inhabited by the Tanos—the former certainly in 1598.

Of the Tehua pueblos but one, that of "Oj-qué," or San Juan, stood on the east bank of the Rio Grande, about its present location. The villages of "Nambe," "Tezuque" ("Te-tzo-ge"), "Pojuaque" ("Po-zuan-ge"), and "Cuya-mun-ge" were (1598) inconsiderable hamlets, but they grew very rapidly during that era of general prosperity of the Pueblos which ended in 1680. The main settlements of the Tehuas stood on the west side of the river, and consisted of not less than ten villages. Only one of these remains *in situ*—Santa Clara ("Ca-po"). San Ildefonso ("O-jo-que") stands on a site about one mile from the "Bo-ve" of 1598. The pueblos of "Troo-maxia-qui-no" (Pajaritos), "Camitria," "Quiotráco," "Axol," "Junetre," etc., are found, in ruins, in Rio Arriba county also, so is "Yunque," where, on the Rio Chama, the first settlement of the Spaniards in New Mexico was made—first of September, 1598. The "Tiguas"—that is, the Indians speaking the dialect of Sandia and Isleta—just grazed the southwestern boundary of the county, through their two pueblos at old San Pedro, both of which were abandoned after 1680, and are now in ruins.

The inhabitants of the Pecos valley, which centered in the great village of "A-gu-yu," (where the old Pecos church stands,) did not extend their settlements into Santa Fe county proper.

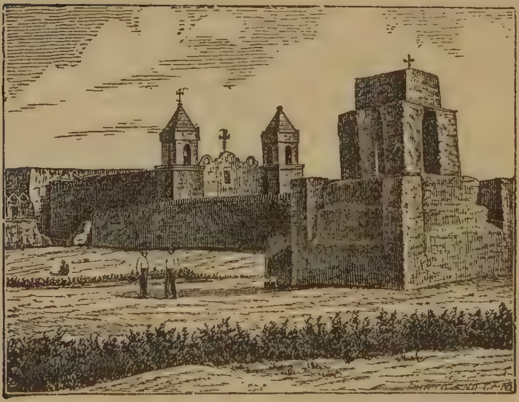
Referring now to those ruins which were inhabited and abandoned previous to the sixteenth century, the oldest type thereof, the detached family house, grouped to irregular hamlets or isolated, is not very common. A village of this sort, indicated by mounds and pottery fragments alone, is found at the station of Lamy, at old Fort Marcy (Santa Fe), and isolated buildings or small groups are scattered, though not profusely, in some parts. In the form of so-called "cliff-houses," or small caves, walled up, this class of aboriginal architecture is still now rarely met with. But the latest form, that of the compact, communal house, several stories high, is represented by numerous ruins.

Beginning at the south, there is a ruin at Valverde, near Golden. A chain of four handsome, ancient villages, some of them quite large, extends from west to east, at an average of five miles south of Galisteo, along the southern "Cresto." These are the "Pueblo Largo," "Pueblo Colorado," "Pueblo de Shé," and the "Pueblo Blanco." A large ruin lies about two and one-half miles east-northeast of Wallace. On the "Arroyo Hondo," five to six miles south of Santa Fe, there are two, a small one above and a large one below the rocky gorge. The road to Peña Blanca intersects the foundations of a small pueblo six miles southwest of the city, near Agua Fria. North of Santa Fe I know of at least three ruins of that character. East and southeast of Tezuque, towards the Sierra, there is the ruin of "Pio-ge," at Los Luceros, whence the present Indians of San Juan settled in the locality which they to-day occupy. This list of twelve approximates only the full number of ruins of that description.

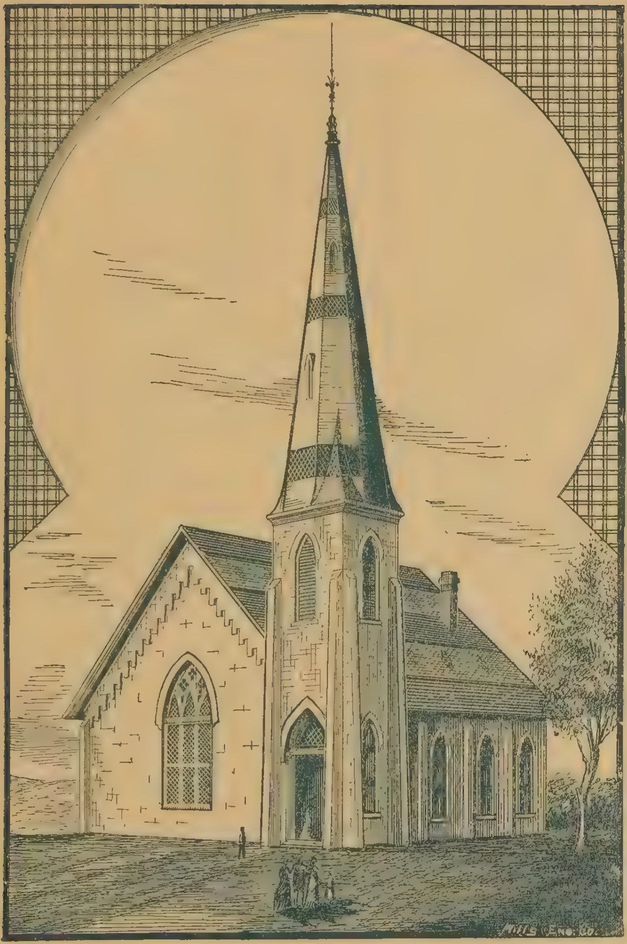
Beyond the Rio Grande, and facing the northern part of the county, to the west, the huge cañons of the Sierra del Valle disengulf towards Santa Clara. The friable volcanic *tufa* of which their sides are formed has been scraped out in numerous places, so as to form artificial caves, mostly of small size, each group of caves representing a pueblo for itself, and imitating, as far as practicable, the system of the many-storied communal village. Other ruins of the latter character occupy the tops of the mesas and the base of the cañon. These ancient cave-habitations which, from the nature of the rock, were of easier construction than house-building proper, are claimed by the Tehuas as having been the homes of their forefathers, previous to their descent into the Rio Grande valley. There exists consequently a historic connection between them and the settlements of northern Santa Fe county, which connection explains their brief mention here. I have to remain,

Very respectfully, AD. F. BANDELIER,

In Charge of Investigations for the Archæological Institute of America.



OLD CHURCH AND SHRINE OF SANTA CRUZ.

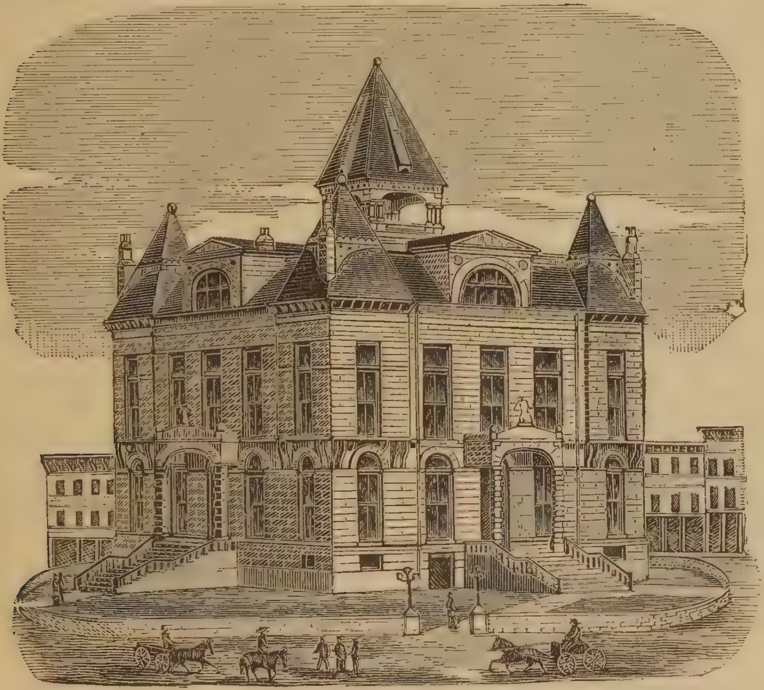

MILLS ENG. CO.

FIRST PRESBYTERIAN CHURCH, SANTE FE.
(SOCIETY ORGANIZED 1867. FIRST IN THE TERRITORY.
NEW EDIFICE ERECTED 1881.)

# SAN MIGUEL COUNTY.

BY J. H. KOOGLER, COMMISSIONER.

San Miguel is the most populous county of the Territory, and in many respects the best. The climate is particularly equable, agreeable and healthy. The surface of the country slopes from the western boundary, the summit of the mountains, to the Texas State line on the east. Thus, while the altitude in the west reaches twelve to fourteen thousand feet, the eastern portion of the county is not greatly over four thousand feet above the sea level. The slopes of the mountains and foot hills are covered with extensive forests of yellow pine, pinon and cedar timber. These forests of pine, which are not difficult of access, will furnish lumber sufficient to supply the Territory with building material for a century to come. Many saw mills are now employed in manufacturing lumber, and the owners find ready sale for the same, Las Vegas being the principal shipping point and lumber market for the Territory. As the Territory is settled and population increases the demand will



COURT HOUSE, SAN MIGUEL COUNTY.

grow with the population, and this will prove an important and increasing element of wealth to the county. The lumber is of excellent quality, and compares very favorably with Chicago lumber for all building purposes.

## WATER.

During the winter season the snow fall in the mountains is very heavy, and this is the source of numerous streams of clear, pure water, which flow out across the county to the east and south, forming beautiful, fertile valleys. The principal streams within the county are the Pecos, Tecolote, Gallinas, Sapello, Conchas and Canadian. The first three are tributaries of the Pecos, which empties into the lower Rio Grande in Texas, and the last three uniting in the Canadian, run east through the Texas Panhandle and Indian Territory.

## AGRICULTURE.

The valleys of the streams are not wide, but they are very productive wherever water is supplied to them by means of irrigating ditches. At many points the water can be easily taken along the slopes to the mesas, and thus, when necessary, large bodies of land be brought under cultivation. While it is not claimed that New Mexico is particularly adapted to farming, yet the amount of good land which can be brought under ditch is much greater than the casual observer might suppose. In the way of agriculture the possibilities of New Mexico, and particularly of San Miguel county, have not yet been even tested or tried. Hitherto men have not come to New Mexico for the purpose of farming. Before the advent of the railroad they came here as officials, or to make money by trade or barter, and not to help build up the country. Since the building of the railroad, the more flattering pursuits of stock raising and mining have principally engrossed the attention of new-comers, and the advantages of farming have been tried only in a comparatively small degree. But this must change. It requires large capital to engage in the stock business or mining, while farming offers good inducements to men of smaller means. The same industry, pluck, energy and determination which characterizes farmers in the western States, if expended here, will result in as great if not greater success. The soil is strong and rich, and when supplied with water and the same attention given to crops as in the States, the most bountiful yields are realized. Irrigation continually renews the active elements of the soil, and it never wears out or deteriorates by cropping. The greatest drawback to most farmers coming from the States is the lack of knowledge in irrigating lands. But this is a system which can be learned, and in the hands of energetic men can be easily applied. It has proven eminently successful in California, and is just as good here. Wheat, oats, rye and barley grow well and yield immense returns. Corn does fairly well, depending on the altitude of the locality; and beans, peas, cabbage, radishes, and all the hardier vegetables, can be raised in abundance, and are of great size and excellence. There is no good reason why San Miguel county cannot raise all that it consumes and have a surplus. We need an industrious and persevering class of farmers, and they should be encouraged to engage in that occupation.

## HORTICULTURE.

The Pecos valley, though narrow, offers peculiar advantages for fruit growing. The peaches, pears, apples, grapes, cherries and small fruits grown there cannot be surpassed anywhere for size and flavor. Intelligent industry is required to make that valley a blooming orchard and garden throughout its whole length in this county. The water is abundant and plenty, and the valley is protected from winds and storms by high and picturesque walls of rock through which it has been worn. The same can be said for all the other valleys of the various streams in the county. Nor is farming only successful by irrigation.

## FARMING WITHOUT IRRIGATION.

Near the mountains crops are raised with no other supply of moisture than the natural rainfall. Observing men are of the opinion that wheat would be as certain a crop here, one year with another, as in most of the western States, In central Colorado farming has become an important element in the wealth of the State, and this county has as great advantages as any portion of Colorado. It is a mistake to suppose that agriculture pure and simple is not practicable or profitable in New Mexico. It is true that the whole country cannot be cultivated, but the river valleys are susceptible of a high state of cultivation, and there always being a home demand for farm products, the profits therefrom are greater than in purely agricultural States. The development of this interest has not yet commenced, but it will come soon. The tide of immigration pouring into the United States from Europe, and continually push-to the West, seeking homes, will soon render the river valleys important and valuable.

## STOCK RANGES.

Between these valleys are vast areas of high, undulating country covered with the native gramma grass, rich and nutritous, which forms the pasture lands for stock. The eastern and southern portions of the county, watered by the Canadian and Pecos rivers and tributaries, are wonderfully fine stock growing regions, combining water, grass and shelter. The best stock ranches of the Territory are situated there, and the herds are steadily increasing in number and value. The grass cures on the ground in the fall of the year, constituting a natural hay of the best quality, and stock live and thrive upon it, without other feed, throughout the winter months. Splendid beef cattle are taken right from the range in the spring without any other fattening process. During the last three years a material and important change has taken place in the stock interests of this county. Formerly sheep raising and the production of wool have been the great object of ranchmen, but the depreciation in the price of wool and the steady advance in the value of cattle have turned the attention of ranchmen from sheep to cattle. The influx of cattle for the past two years has been steady and large, and the ranges are rapidly becoming heavily stocked. Great attention is being devoted to the improvement of the herds, and many hundred head of the best Short Horn and Hereford bulls to be found in the States have been purchased and shipped to this county during the last spring and early summer. This is preëminently a breeding country, owing to the mild and equable climate, and cattle multiply with a rapidity not experienced in more northern latitudes. Stockmen utilize this fact to realize the greatest profits from the business. Although the eastern half of the county is the great ranching section, yet the mountains in the west present excellent opportunities for summer ranges which are not yet fully occupied. Stock raising at present is the great and leading industry of the county, but it will not be many years until farming becomes an important factor in the wealth of this as well as other portions of New Mexico.

## MINING.

In mining but little has yet been done. During the last spring important and valuable discoveries of gold, silver and copper have been made in the western portion of the county, particularly in the vicinity of Rociado, about twenty miles from Las Vegas. Very fine ore coming from there has been exhibited, and very considerable development work is being done upon the several discoveries. The outlook is promising for the establishment of a good mining district. The mountains are known to be mineral bearing, and time, prospecting and capital will demonstrate the wealth of the precious metals contained in them.

## LAS VEGAS.

Las Vegas is the commercial center and county seat of San Miguel county. The history of the town is one of steady progress, since the day the first house and corral was built on the Gallinas river, at the crossing of the old Santa Fe traders' road. Even prior to the coming of the railroad it had grown to be the second commercial city of the Territory, and with the advent of the iron horse it rapidly rose to an equal position with any other town of the Southwest. In 1879 and 1880 the railroad gave some impetus to the already rapidly increasing business, but the terminus of the railroad did not remain here long enough to constitute an important boom. It passed on almost immediately, and whatever benefits were realized in railroad construction went more largely to Albuquerque, Socorro, El Paso, and the towns of the Rio Grande valley. Las Vegas was built, thus, on its own inherent and natural resources, advantages and position; and which advantages contribute to its permanent and steady growth without the adventitious aids of temporary railroad booms or local mining excitements.

The wholesale merchants are steadily extending their business, and the retail dealers have a constant and flourishing trade. The daily newspapers, the *Gazette* and *Optic*, are well sustained, and the banks take rank among the most substantial and trustworthy financial institutions of the Southwest. The best and most permanent class of business houses and residences south of Denver have been built, and the work of construction still goes on in all parts of the town. Besides this steady growth, surplus money has been found to invest in street car lines, water works, gas works, and telephone exchange, comprising all the requisites of a modern city in the States. Planing mills, sash, door and blind manufactories, foundry and machine shops, brewery, bottling works, and many other smaller manufactories flourish. The school and church privileges are unexcelled in the Territory, a college, convent school, an academy and seminary are now all firmly established, with good support. The town boasts livery stables where the most stylish turnouts can be secured, opera house, and excellent halls for public entertainments, music stores, book stores, hose companies, a military company, thoroughly organized and trained, brass bands, dancing academy, skating rink, and all such means of amusement pertaining to a wide-awake Western town.

The location of Las Vegas is beautiful, and the configuration of the country seemed destined by nature to be the place for an extensive and wealthy city. The extension of the railroad south did not hurt Las Vegas, but was the means of increasing the trade of the wholesale merchants, and afforded means for reaching more distant localities. East of Las Vegas, and directly tributary to it, lies the best stock range in the world, boundless and endless, covered with exhaustless pastures, as good in winter as in summer, and which entails no greater expense upon the stockman than branding and herding his stock. It is constituted of Eastern New Mexico, the Panhandle of Texas, the Staked Plains, and the valley of the Pecos river, a stock country unexcelled, and steadily increasing in flocks and herds. From Las Vegas these wealthy and cash-paying stockmen draw their supplies, and in it transact their business. This is a resource which not only aids the trade of the city, but is the means of growth in the town itself. Stock raisers are, as a rule, men of ability and culture. They have families for whose welfare they care liberally and tenderly, and they seek a residence in a town where good schools, churches and cultivated society may be enjoyed. Many have already come among us, and many more will do so, which accounts rationally for the continual building of handsome residences. It is not an overgrowth, but a natural demand which is being filled. Stockmen thus find here pleasant homes, convenient to their business interests. In this the great benefit of the best system of water works, and best water in the West, is beginning to be understood and appreciated. Yards, gardens and grounds are being tastefully laid out, covered with green sward and ornamented with shrubbery and fountains. Trees are planted, public parks made beautiful, and ere many seasons the green foliage of delightful groves will charm the admiring eyes of visitors to Las Vegas. The steady settlement of prominent stockmen in our midst is but the beginning of future great accessions from people engaged in other important industries which are in process of development in the Territory.

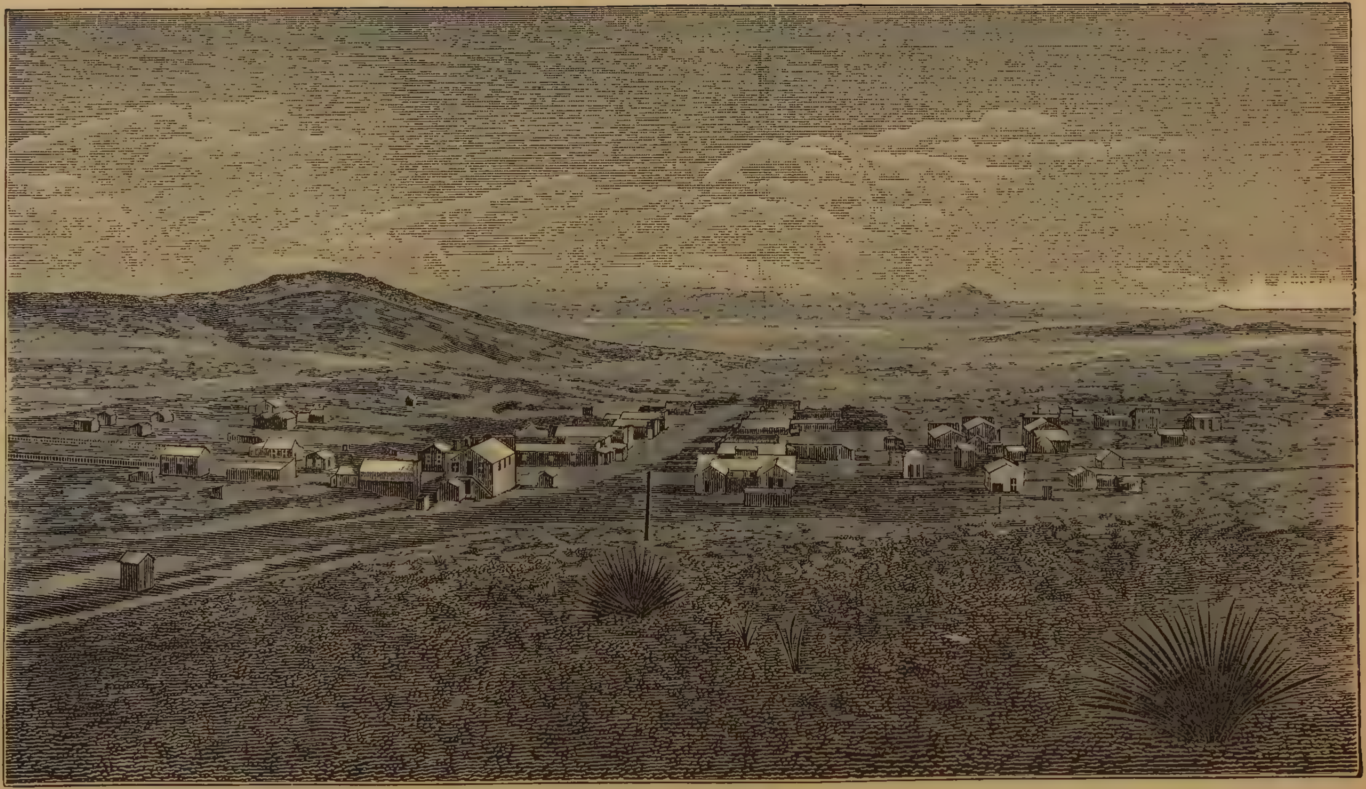
The climate of Las Vegas is an important element and cause of growth of the town. Taking it all in all, winter and summer, for health and comfort the climate cannot be easily surpassed. There may be a few favored spots on the earth where it can be equalled, but those places are extremely limited. The air here is as balmy as that other consideration, good health, will permit; and this high, dry, pure atmosphere, the very elixir of life, in connection with our other advantages, will attract hither the wealthy mine owner and capitalist, whom the future of the Territory will produce and foster. Not only will mining men, mill owners and proprietors of smelting works and blast furnaces in New Mexico find this a fine residence city, but the capitalists that will be interested in the vast stock-raising and mining enterprises of Chihuahua, Sonora, and the other States of northern Mexico, will come here to live. It is sufficiently near, with close connection by rail, to all this southern country, perfectly free from malaria, and combines good health and comfort.

## THE HOT SPRINGS.

As a great and important auxiliary to these advantages, the great sanitarium, the Hot Springs, must not be forgotten. These springs afford abundance of water of a high temperature, and possess a subtle influence in subduing disease. The waters have as great, if not greater, curative qualities than the Hot Springs of Arkansas, and when to this is added a pure, health-restoring, and health-preserving atmosphere, the Arkansas resort will not compare with this. These springs are owned by a company composed of men interested in the Atchison, Topeka & Santa Fe railroad, which is projecting gigantic improvements. The bath house now built is the best and most complete west of Chicago. One excellent and extensive hotel is in operation. The past year has witnessed the rebuilding of the famous Montezuma Hotel, upon a much grander scale than before. A magnificent hospital building is also being constructed, convenient to the springs, complete in all its departments. The grounds at the springs will be greatly enlarged and beautified, extensive drives constructed, covering twenty miles square of rugged peaks, beautiful, wooded paths, sequestered valleys, deep cañons, and roaring mountain torrents. No other resort so splendid can be found in the West.

## RAILROADS.

Several railroads are converging to this point from the south and west, and it is a safe prediction that within from two to five years three new and independent lines of railroad will be built to Las Vegas. The immediate surroundings of Las Vegas are such as to insure it a good retail trade. Besides the trade from the population of the county, the excellent wheat-growing valleys of the Mora and Taos are directly tributary on the north and west. The splendid building material immediately surrounding the town is abundant and cheap. The finest red and white sandstone quarried in the Territory lies directly west of the town, and great forests of yellow pine cover the foothills on the north and west. San Miguel is one of the best counties in the Territory, and Las Vegas an excellent city in which to live.



TOWN OF LAKE VALLEY.

# SIERRA COUNTY.

BY CHAS. W. GREEN, A COMMISSIONER.

The new county of Sierra is somewhat south and west of the center of the Territory, having an average length, from east to west, of about fifty miles, and a breadth from north to south of about thirty—an area of something more than fifteen hundred square miles. It was organized at the last session of the Legislature, and includes the territory taken from the northwest corner of Grant, from northwest Dona Ana and from the center of Socorro.

It is compact in form, and the county seat, Hillsborough, is easily accessible from all parts of the county. It is well divided into valley, mesa and mountain lands, embracing a considerable section of the Rio Grande valley, across the table lands to the summit of the Black Range. It is generally so well watered as to make its pasturage lands fully available, and the stock interest has already secured a substantial foothold.

As a mining county it certainly has no superior, if it has an equal in the Territory. Lake Valley, in the extreme southern portion, is by far the best camp in the Territory, and its product during the past four years is closely approaching that of all other districts combined within the Territory. This is, in a large measure, due to the greater development of the mines, though they have proven exceptionally rich. It is chiefly the work of a single company, or, more strictly speaking, of three companies of the same owners and under one management, and the net product has been almost if not quite one-half the entire yield. It is singular that other mine owners in the vicinity, having the encouragement and incentive of such results, should have done practically nothing upon their claims. The same mineral belt is plainly marked for miles, and it is but fair to presume that other equally as rich deposits will eventually be discovered. The foot hills and slope of the range, wherever prospected, have given good indications along the entire western side of the county.

At Tierra Blanca, seven or eight miles northwest of Lake Valley, several prospects have been worked to a considerable depth, and are so encouraging that the work is still continued on them, although, as yet, but a small portion of the product is high enough in grade to bear shipment. A few miles farther in the same direction, and about fifteen miles from Lake Valley, is the Kingston District, which has been remarkably productive of results, in proportion to the capital and labor invested. The *Bullion* has paid its way, and some handsome dividends, and has become a regular producer of very high grade ore, all of it bearing wagon transportation thirty miles, and then rail to Denver, and yielding from four hundred to three thousand dollars per car above transportation and working charges. The *Superior* is an adjoining claim, belonging to California parties, which produces the same class of ore, and has been regularly worked for the past two years. There are other mines in the same vicinity producing a similar class of ore, and making regular shipments —the *Lady Franklin*, and the *Caledonia* among the number. Half a mile away is the *Iron King*, with its immense croppings of iron, manganese and galena ores, from which large quantities of medium grade ores have been taken, and for the treatment of which a very complete smelter has been erected at Kingston, the prosperous mining town of the district. Between the Iron King and the town are the *Brush Heap* and the *Illinois*, both of them mines which have already paid their owners a handsome return above the investments. South of the town the *Monaska* group has yielded equally satisfactory results, and others with less development are quite as satisfactory.

Ten miles east is the Hillsborough District, within which the Animas peak is the center of a system of gold, silver and copper mines, with an extended area of gold placers from which there has been a large amount of gold taken out during the past five years, although for most of that time the greater portion of the district has been owned and occupied by a hydraulic company that has not yet completed its pipe line. It has, however, expended nearly two hundred thousand dollars in the erection of a capacious reservoir, and in the laying of some six miles of large pipe, part of the way through a tunnel. During the last season it has utilized such water as it has secured from the North Percha, in washing one of the small and least important of the many gulches it controls, realizing very satisfactory returns. Considerable work and money has been expended in the development of the *Bobtail* and two or three other mines, which are only needing the employment of sufficient capital to make them large producing properties.

Going farther north along the range, a very considerable amount of work has been done in developing flattering prospects, but the distance from the railroad has made it impracticable to ship ores in any considerable quantity. Concentrating works have recently been established, and it is expected that the northern part of what is known as the Black Range District—which includes the Kingston District—will yield a considerable mine revenue during the present season.

As previously stated, the county is being extensively occupied as cattle ranches, and there are one or two large companies already established. A large number of them are occupied by small herds in the tributary valleys to the Rio Grande, and in these valleys there are also many agricultural possibilities, not yet utilized as they soon will be. The climate is so mild and equable, and the protection of stock so complete, that this industry is subject to far less than the usual mishaps and disadvantages of less favored localities. But little snow ever falls, and it lies for a brief period, only serving to supply the fountain heads of the springs and streams.

No census has been taken since the organization of the county, and a larger share of the population has come in since the census of 1880 was taken, so that it would be merely reckless guessing to estimate the number of inhabitants. The assessment of the past year, the first one taken since its organization shows a taxable valuation of a considerably larger amount than was anticipated, though not nearly so great as it is likely to be when more closely assessed under the new law.

The principal towns, or trading points of the county are Lake Valley, in the south, connected with the main line of the Santa Fe road by a branch line fourteen miles in length. It is not only supported by the trade of the mines—employing nearly three hundred people—but it has a trade from neighboring camps, and a considerable trade with the stockmen. It is also the shipping point for the Hillsborough, Animas and Kingston districts, and as a receiving point for general merchandise is one of the best stations in the Territory, to say nothing of the outgoing shipments of ores, which reaches into the thousands of cars annually. The total population of the town including the miners is probably six to seven hundred. Hillsborough, the county seat has not a large resident population, although the center of considerable trade.

Kingston is one of the prettiest locations in all the Territory, high up in the mountains, gently sloping, at a little elevation above the bed of a beautiful mountain stream, the lofty mountains on every hand, as well as the valleys between them are covered with evergreens. As noted before, it is the center of a prosperous mining district, and has promise of a steady growth and prosperity. In the north are the towns of Chloride and Grafton, centers of the mining and cattle industries.

Palomas is in the Rio Grande valley, and an old trading point, now deriving its chief importance as the seat of one of the largest cattle companies in southern New Mexico.

It promises to be one of the best and most promising of all the thirteen counties.

## THE BLACK RANGE.

BY H. HARTMANN, G. S., U. S. A.

Engle is 226 miles south of Santa Fe, 65 south of Socorro, on the A. T. & S. Fe railroad. From Engle to the Rio Grande, and *via* Cuchillo, on the west bank of that river, easy access can be gained to the Black Range, which lies to the northwest of that point, and runs generally north and south.

### GEOGRAPHICAL.

The principal towns and mining centers of the Black Range are Grafton, Chloride, Fairview, Robinson, while other settlements are Cherryville, Cañada, Alamosa, Montecillo, Cuchillo, Hermosa.

Grafton is situated on the west side of the range, near the north end, at one of the heads of the Gila river, while the other places mentioned are on the east side.

The location of the several places named is as follows:

Montecillo in township 10 south, range 6 west.
Robinson " " 10 " " 8 "
Grafton " " 10 " " 10 "
Fairview " " 11 " " 8 "
Chloride " " 11 " " 9 "
Cuchillo " " 12 " " 5 "
Cherryville " 8 " " 7 "

The road distances from Engle to the above points are as follows, traveling westerly: from Engle to Cuchillo, 23 miles; Cuchillo to Fairview, 25 miles; Fairview to Chloride, 9 miles; Chloride to Grafton, 8 miles; Fairview to Robinson, 5 miles; Robinson northerly to Cherryville, on the Hot Springs Indian Reservation, Socorro Co., 15 miles; from whence *via* Montecillo, Alamosa and Fort Craig, it is 53 miles to San Marcial. Montecillo is on this same road, southeast of Cherryville and 30 miles northwest from Engle.

### HYDROGRAPHY.

The drainage west of the divide constitutes the head waters of the Rio Gila. The drainage east of the divide is southeasterly in its course and flows into the Rio Grande and on to the Atlantic. The principal water courses are the Cañada, Alamosa, Rio del Cuchillo Negro and Rio de las Palomas, which all have worn deep channels through basalt, while the country between these streams consists mainly of decomposed feldspathic basalt, and is therefore well adapted for grape culture. The Rio Alamosa is formed by the union of two creeks, which originate in warm springs, and a short distance below enters the Cañada. The beds of these streams are all cut very deep, and in traveling over the country one is hardly aware of their presence until close to their banks. Numerous runs and creeks of small size carry water a portion of the year, lower down from the above streams. The Chuchillo Negro has three main forks, and the Palomas quite a number of sources.

The elevations on the west side of the divide are at Shaw's ranch, N. W. foot, 7,255 feet; Old Camp Sherman, 6,926; Old Camp Vincent, 6,188. Elevations on the divide: between Cherryville and Shaw's ranch, 7,921 feet; at north head of Rio Cuchillo Negro, 7,698, and at middle fork of the latter, 7,628 feet. Elevations east of the divide: Cherryville, 6,081 feet; Cuchillo Negro, 4,568, and Fort Craig, 4,447 feet.

Since there is enough timber on the Black Range for all mining purposes, a constant rainfall during certain seasons of the year is secured for a long period yet.

## GEOLOGICAL.

The Black Range, running parallel with the Rio Grande, at an average distance of fifty miles, and entirely across the county from north to south, is mainly composed of granite, porphyry and limestone. What is known as the Black Range Mining District is in the northern portion of the county, and covers that portion of the range proper which lies between Cherryville on the north, and Palomas on the south, including besides the main range a spur that runs northeasterly twenty miles. The original name of these mountains is "Cuchillo Negro," or as on some maps, "Negritas Mountains." They are covered with quartz veins, while the mineral leads are true fissures, mostly between well defined walls. Especially on the eastern slope the mineral belt is well developed, running north and south for a considerable distance, visible on the surface to a great extent. In places quartz crops out parallel to the main vein, while numerous spurs depart from the main lode. Chutes and chimneys of ore occur at many places in the rocks of the Black Range, which are, as said, of igneous origin. While the main range bears various modifications of granite, the mineral zones in the spurs occur generally in trachyte of close texture, while porphyry dikes are penetrating it, forming often the enclosing walls of the mineral veins. Limestone occurs on top of the range, and often also the ores occur on the contact line between limestone and porphyry. As a rule, in ascending from the foot to the top of the mountains, one encounters first a mass of boulders and pebbles of almost any size, then a whitish belt of porphyry, next a brown or dark gray trachyte, then quartz, again porphyry, and crowning all a blue limestone, probably of the Devonian age.

## MINES AND MINING.

The mining districts are grouped around the above named towns.

Black Range and Apache Mining District surround the town of Chloride; the first discoveries here were made in 1879, the town being situated in Chloride Gulch. The prominent geological feature is quartzose rock, appearing in a stratum of one hundred feet thickness, interspersed with seams of copper from 3 to 5 per cent., as red oxide. Above this is a stratum of conglomerate, consisting of porphytic and trachytic masses with seams of sandstone and some limestone. Farther up Chloride Gulch there is a large occurrence of feldspathic porphyry, while the northwest summit of the range above is crowned with limestone. Igneous rock dykes are frequent, and in their contact with the other formations the argentiferous copper ores occur.

Six miles northeast from Chloride, on the east side of Dry Creek, is the Buffon lode, four feet wide, with mineral veins of twelve inches thickness; it is a quartz carrying copper. The ore yields $100 a ton silver, and some gold. Here are the *Fast Mail*, *Mail Line*, *Solid Comfort* and *Ready Relief* mines.

The *Dreadnaught*, across the ridge from the former, in Mineral Creek, is on the same belt. Here the vein runs south and north, is five feet wide, the ore a quartz carrying sulphides, oxides and some iron.

To the north of the former is the *El Paso and Eureka* mine, (one of the Ivanhoe Company's mines); south therefrom the *Adirondack*, near the top of the mountain; here the ore is found on the contact between porphyry and limestone. Several miles west of the former is the *White Signal*, where veins of copper glance occur in quartz. The ore yields $50 to the ton.

Six miles southwest of Chloride is the Hagan Peak District, where again porphyry and limestone are the principal rock formations. The principal mine is the *Colossal*. Fifteen to sixteen miles west of Chloride, near the summit of the range, is the *Silver Monument*, where the ores occur on the contact between trachyte and porphyry.

Several miles south of Chloride is the Pye lode, extending four to five miles on the contact between porphyry and limestone. Here are *Tidal Wave*, *Midnights*, *Kings Nos. 1 and 2*, *Way Up*, *Highland Chief*, and others. The ore is mainly silver bearing, with some copper, lead and iron; horn silver is predominant, with some sulphurites and sulphides of silver.

The Cuchillo Negro Mountains proper are about three miles east of Fairview. The range is the result of uplifts, the strata dipping about thirty degrees east. The foot of the mountains is covered with conglomerate, in boulders and pebbles. Ascending, a belt of whitish porphyry appears, then brown and dark gray trachyte, porphyry, and on top blue limestone. Several miles of the east side of these mountains are covered with the mineral bearing contact, in workable chests or chutes. The principal mines here are the *Cuchillo*, with copper carbonates, oxides and glance, also galena. There is a smelter belonging to the mine, but idle; it was built on the misunderstanding of the character of the ores. The *German* mine is on a four-foot porphyry vein.

From Bear Creek, past Grafton, a gravelly ledge extends for nearly eight miles, ending north of the *Occidental* mine. Here is the *Ivanhoe* property, on a vein in massive quartz, two to eight feet wide, carrying silver and some gold and copper, yielding $60 to the ton. Some eighteen other locations are on the same vein; the *Buckeye*, *Surprise* and *Alaska* are north of the Ivanhoe, about one fourth mile north of Grafton. The Occidental is about six miles north of Grafton, with a ten stamp mill on Wild Horse Creek, one mile from the mine, with abundant water. The *Nordhauser* mine is in Bear Cañon, midway between Chloride and Grafton, on a quartz and calc spar ledge; the vein is in porphyry, the ore galena and sulphate of lead.

The Palomas or Hermosa District is fifteen to sixteen miles east of Chloride; the veins are on the contact between limestone and porphyry; galena is here the base metal, and silver occurs as chlorides and sulphides; some oxides and carbonates occur also, but they carry much silica.

From this short mention of the mines in the Black Range, it is evident that the range, as a whole, has the following characteristics in brief: Below the entire mass of eruptive flows are the Lower Silurian strata; then more recent overflows of porphyry, known as "greenstone," follow; and capping all is a limestone of the Devonian age.

# SOCORRO COUNTY.

BY PROF. CHARLES LONGUEMARE, COMMISSIONER.

## MINING.

That this county attracted more than the passing attention of the early Spanish adventurers is evidenced by the abandoned shafts and other markings in the Oscura, Sheldon, Bosquicito and other mining districts upon the eastern side of the Rio Grande, and where existing and important excavations impress the visitor with respect for the skill of the old Spanish miner of the sixteenth century. Owing to the Pueblo uprising of 1680 the country was abandoned. Mining operations were not resumed until about 1840, when the late Hon. Estanislao Montoya developed the *Merrit* mine in the Socorro District, and treated the extracted ore in a "fondacian" (Mexican smelter) in Socorro. The enterprise was successful, but was abandoned owing to Indian hostilities. From that date until about the year 1870, mining was entirely suspended within the limits of this county. During that year, however, a number of hardy miners engaged in the development of the Magdalena mines, and a short time subsequent Water Canon received the attention which it merited, the former district, as well as the Pueblo, were the seat of a number of fondaciones, constructed of clay and irregular fragments of stone. The blast was furnished by a common blacksmith's bellows. With these crude and primitive plants the energetic miners of that period produced no inconsiderable amount of good base bullion, which was shipped to the east by bull teams over the old Santa Fe trail. The placers in Water Canon were shortly afterwards worked and some gold dust recovered. Owing to the declining value of lead, and no doubt also to other causes, the chief of which being the want of the necessary facilities, smelting was abandoned, and work in the Magdalena and Pueblo Districts soon became limited to assessment and other superficial developments. Following this depression in mining operations the Indians became troublesome, and finally opened hostilities. They took the war path under the leadership of the famous fiend and Apache chief Victoria. From that epoch until near the close of 1882, the condition of the country was so unsettled, and life and property so unsafe, that systematic mining operations were simply out of the question. However, about the latter part of 1882, the Indians had been either dispersed or annihilated, and from that time we date the opening of modern mining in this county. We must, however, remark here, that during the years 1881 and 1882 the Merrit, *Torrence* and other properties were actively worked. This is due to the fact that, being only three miles west of the city, little risk was encountered. But this was the exception and not the rule; hence the position we take, that mining in Socorro county dates from the close of 1882. The bullion product of that year amounted to $253,812; it increased in 1883 to $406,000, and in 1884 it reached $1,228,266. In the sum total for the year 1884 we do not include the production from the Black Range and other camps which now form a portion of the new county of Sierra. These figures speak for themselves, not only eloquently in behalf of the mines which produced the mineral, but also for the pluck, perseverance and indomitable energy of those untiring prospectors of early days, who had patiently labored, awaiting the advent of the A. T. & S. F. R. R., and the capital which followed its wake.

Socorro county contains fifty-three mining districts, of which the incorporated city of Socorro is the geographical and commercial center. A number of these districts contain each several camps, as, for example, the Magdalena group, which embraces Kelly, Magdalena City, North and South Camps. To give the reader a just conception of these different districts a map would be required; but as there has been no general government survey, only an approximation of the relative distances of these districts and their camps can be given. See "Mining Camps and How to Reach Them," among the opening pages of this book.

Within the limits of a paper of this character, the mineral found within the county can only be described generally.

Bitumen, sulphur, nitrous earths, natron, common salt, borax, sulphate and carbonate of baryta. Lime is represented by the following varieties: Sulphate, anhydrate sulphate, calcite, dolomite, phosphate and fluoride. Magnesia occurs as a sulphate and carbonate. Native alum, alum stone and shale are abundant is the Gila District. Silica in all of its common forms is generally dispersed through the county. The following varieties occur in one or more districts tributary to Socorro: Obsidian, chalcedony, crystalized amethyst, false topaz, smoky quartz, prase, opal and silicified wood. The clays are represented by several excellent varieties of fire and potter's clay and kaoline.

## COAL.

Bituminous and semi-bituminous coal is generally distributed throughout the extent of the county, but has received little attention, unless we except the coal seam of the Carthage District, where the A. T. & S. F. R. R. Co. are successfully exploiting a large vein of extra quality of bituminous coal which is coked at San Antonio, twelve miles south of Socorro. Extensive coal fields exist in one and all of the districts situated on the east side of the Rio Grande, and in the Saladita, Salada, Abbey and several other districts west of Socorro.

## METALS.

The following metals occur:

Iron, as a bi-sulphuret, sulphuret, mispickel, magnetic, specular, limonite, chromic, titanic, spathic, and arsenate.

Gold, associated in quartz, spar and talc, with iron, copper, galena and silver. It also occurs in Water Cañon, and in the St. Felicite District, in placers. In the former some effort at work has been made to sluice the dirt, but owing to the insufficiency of capital and want of necessary appliances, was abandoned.

Silver—Native, sulphuret, brittle, chloride and bromide.

Lead—Galena, oxide, Anglesite, phosphate, chromate, cerusite (grey, black, white and brown), vanadate and molybdate.

Copper—Native, vitreous, sulphuret, grey copper, sulphate, vanadate, silicate, red and black oxides, and green and blue carbonates.

Zinc, as a sulphate, silicate, and carbonate.

The following also are found:

Tin as an oxide, vanadium, with copper and lead, tellurium, native bismuth, antimony, arsenic, manganese, chromium, nickel, cobalt and cinnabar.

## ROCKS.

The prevailing rocks consist of several of the granitic groups, syenites, mica slate, clay slate, gneiss, steatite, trap, porphyry, sand stone, conglomerate and limestone.

## MAGDALENA DISTRICT.

During the year 1884 mining received renewed impulsion, owing to the marked success secured in the exploitation of the *Kelly* mine—Magdalena District. This property has afforded throughout the course of the past year sufficient mineral to run the Billing smelter, of 180 tons capacity, situated in

Socorro, but even this great out-put cannot convey an extent of the ore body of that great mine, for the greater portion of the ore treated at the Billing smelter was simply the ore resulting from development work, of which thousands of feet attest to the thorough system of mining pursued. Of the amount of ore in sight in this property, we cannot speak authoritively, but it is the current opinion of conservative mining men that it will afford 3,000 tons of ore monthly for several years to come. We are, however, cognizant of the fact that the property shows no sign, in its deepest workings, of exhaustion. On the contrary, new ore bodies have been reached from time to time by the exploring shifts, which have been left behind as a reserve; while developments for other sources of mineral have been continued in the various workings of the property.

The *Juanita* has furnished considerable ore, and the owner has effected arrangements to inaugurate a deep and methodical system of development this season.

The *Graphic*, *Cavern*, and numerous other properties in the same district, wear a promising appearance, but owing to our limited space we are prevented from describing them in detail. We are warranted in the statement, however, that the Magdalena District properties, in many instances, are preparing to make a good record as producers, and that it will be accelerated now that the branch railroad from Socorro to Kelly is completed. This important line is acting as a stimulant to the camp, and will encourage the miners to renewed exertions to place their claims upon a producing basis, as the railroad affords them a speedy and economical method of transportation to market. The prevailing mineral in the Kelly consists of galena, sulphate of lead, and lead carbonates, associated with iron and lime, and also variable quantities of silver, occurring in combination, and at times in a native state. This remarkable combination of fluxes, and necessary for the reduction of precious metals, recommends itself to the consideration of experienced mining men. The extraordinary volume of the Magdelena fluxing mineral ore bodies is sufficient in itself to place this camp upon a firm and prosperous basis.

## PUEBLO DISTRICT.

The Pueblo District during the course of the past year, 1884, was the scene of much development and continued work, which resulted in the discovery of rich argentiferous gray copper in the *Guiterez* mine, and also in establishing the fact that in several instances, notably in the *Brittenstene* properties, the mineral deposits were extensive and could be profitably exploited.

## WATER CANON.

The mines in Water Canon have made an excellect record, and the work of 1884 has demonstrated that many of the gold and silver properties of this district produce pay mineral in sufficient volume to warrant the expenditure of capital in their further development. Among those making a promising appearance we note the *Star of the East*, *Mayflower*, *Jane Bowman*, *Jumper*, *Fraction*, and *Clipper*, though a score or more of valuable and promising claims are started and merit to be mentioned.

## OTHER DISTRICTS.

The recent assessment work in the Hansonburg and Oscura Districts has been so satisfactory in its results that steps are now being taken to inaugurate the methodical development of several properties there, among them the *Compromise*, at Hansonburg. The ore extracted will be shipped by wagons to Carthage, where it will be conveyed to the East for treatment. The *Eliza*, in the South Oscura District, for the amount of work placed upon the property, makes a remarkably satisfactory showing. The *Old Chief*, in the Center Oscura District, is an old Spanish working, and promises, in the near future, to take an important position among the mines of this county. The Little Burro and San Andreas Districts have not been neglected. Upon the contrary, work in these camps has been prosecuted with more than average skill and continuity. The consequences of this course are, that a number of properties are now in a position to afford regular supplies of copper mineral, which will be treated at San Antonio, twelve miles south of Socorro, by a syndicate of eastern capitalists, who have decided to erect a copper plant there. No mining section in the United States makes a better showing for the amount of means and time expended than in the camps and districts tributary to the city of Socorro. The old adage that more money has been placed in the ground than was ever taken out it, is reversed in this case; for the Billing smelter alone, in 1884, produced more bullion, in value, than all the work performed in the county since 1879.

## MOGOLLON MINES.

The Silver Hill Mining Co., in the Mogollon Mountains, through the judicious investment of capital, and exercising good judgment and economy, have placed the *Silver Bar* upon a paying basis. The company's books for the year 1884, show that their mill and concentrator has produced $100,000 in concentrates, all from Silver Bar mineral. This is more than a satisfactory result when we consider the inadequacy of the plant, which is of the lightest character, and possessing three vanners. The company will, however, this season en-

IN THE MOGOLLONS.

large and otherwise improve their mill, which will result in smelting the output of the county this year.

The Consolidated Cabinet Mining Co., a few months since, purchased the Merrit mine in the Socorro District, for which they paid the owner $125,000. This property has received much attention, and is now affording sufficient mineral to run the stamp mill in Socorro, and which is now operating and shipping silver bricks weekly. In concluding this subject we will say, that one of the great wants of mining in New Mexico has been, in past years, the want of organization among miners. This state of things is, however, rapidly ceasing to exist. The United Miners of New Mexico organization, with headquarters in Socorro, is making steady progress, and before the close of the year will be in a position to afford all the necessary data of output and other reliable statistics appertaining to mining, now so difficult to obtain.

## REDUCTION WORKS.

Socorro county possesses the following plants for the treatment of ore:

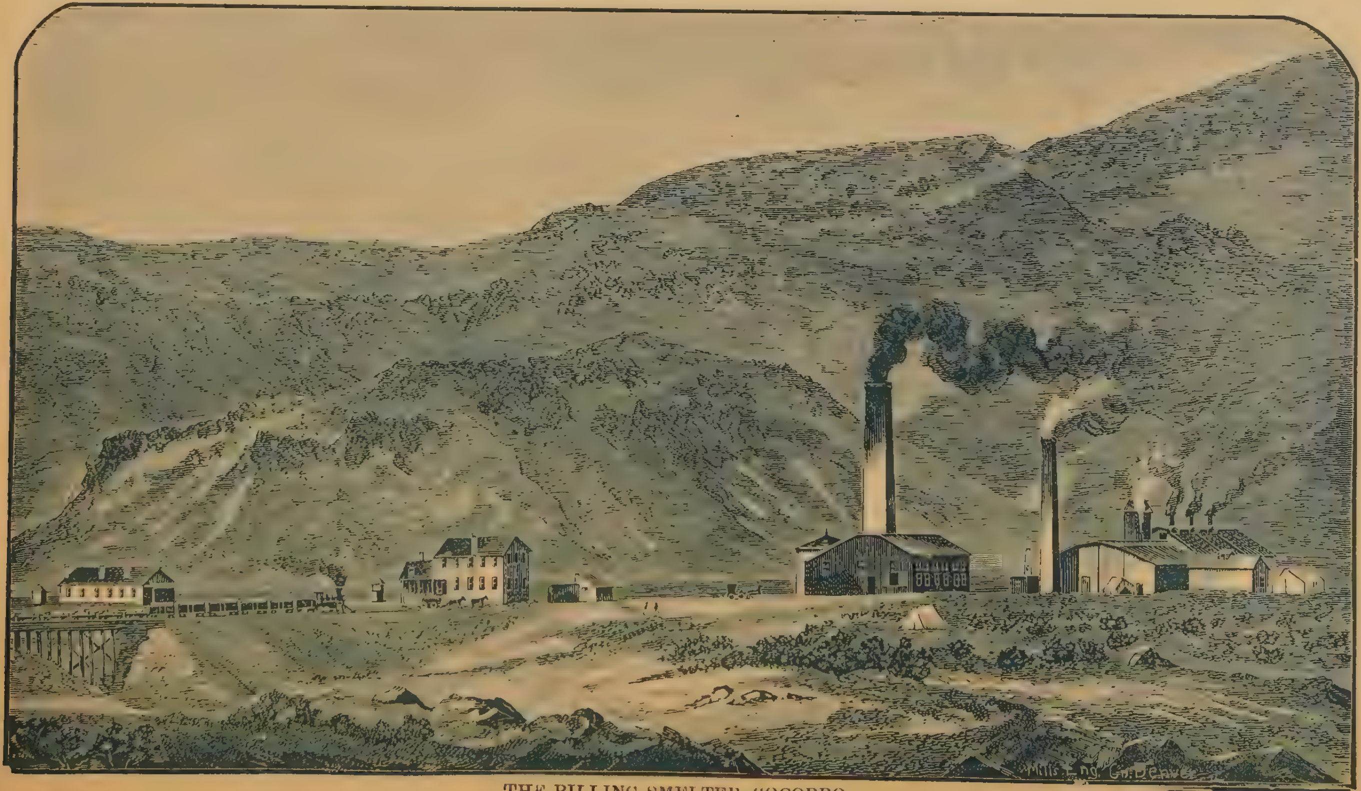
| | | |
|---|---|---|
| Billing Works, Socorro | 180 | tons daily capacity. |
| Eaton Smelter, Kelly | 20 | " " " |
| New Orleans Smelter, Socorro | 40 | " " " |
| C. C. Co.'s Stamp Mill, Socorro | 10 | stamps. |
| Silver Hill Mining Co.'s Stamp Mill, Alma, | 5 | " |

## AGRICULTURE.

Extensive areas of alluvial lands are situated in this county, of unsurpassed fertility. We will not attempt to offer an estimate of their extent, as we possess no accurate data upon which to base a statement. It is sufficient, however, to say that not less than 90 per cent. of the entire arable lands subject to irrigation in this county are uncultivated, and awaiting the advent of the energetic and enterprising husbandman. In the past, the rural industries were prosecuted with some show of vigor, until the advent of the A. T. & S. F. R. R., when in many cases the native owners of the neighboring ranches abandoned their fields to secure work from the company, while others, allured by the immediate profit to be derived by hauling mineral from the surrounding mines to the smelters and mill, turned their attention in that direction, to the detriment of the general agricultural industries. In ante-railroad days, the product not only sufficed to meet the wants of the population of the county, but produced a surplus, which was exported to Texas and other markets. At present we notice a revival of interest in agricultural matters. More attention is devoted to meet the steadily increasing demand, caused by the growing importance of our mining camps. The cereals, including wheat, oats, rye and barley, produce abundant and never-failing crops. The former, when planted under favorable circumstances, in well prepared soil, and irrigated in season, and intelligently, will rarely yield less than forty bushels per acre. In some cases the product is much in excess of this amount; the grain, as a rule, is well filled and of a very superior quality. The production of oats, under a good system of cultivation, yields as high as sixty bushels per acre, and in some cases two crops of oats from the same seeding have matured in the same season. A case of this nature occured upon a piece of church property in this city last year. Corn, under the same treatment received in the Middle States, yields fully the same average.

Alfalfa is one of the most profitable specialties grown by the farmer. In good soil, and receiving proper attention, it will yield five cuttings of not less than two tons per acre the same season, making ten tons of rich stock feed per year per acre.

All of the garden vegetables and esculents, with the exception of the Irish potato, succeed with intelligent attention. Those which seem to reach the greatest excellence are celery, equal to the best raised in the East; the onion, in this valley, reaches wonderful proportions and the highest type of perfection, often weighing four pounds, and in some instances more; melons



THE BILLING SMELTER, SOCORRO.

the radish, turnip, beet, parsnip, garlic, red pepper, cabbage, cauliflower, all thrive and yield abundantly, the cabbage often attaining fifty pounds in weight, and cauliflower reaching proportions we have never seen the eastern varieties attain. All of the small fruits, without exception, return a handsome reward for the time invested in their propagation.

The Rio Grande valley is especially adapted to the labors of the agriculturist. The following fruits, with the same attention bestowed upon them as in the East or California, yield prolifically, with no danger of incurring the failure of crops so common in the East, due to the depredations of noxious insects. In addition, as irrigation is necessary to the production of one and all crops in this county, the cultivator has neither excessive rains nor parching drouths to dread. The English walnut, French and common chestnut, almond, peach, apple, pear, quince, plum, cherry, apricot, nectarine, and hardy varieties of the fig mature their fruit in sheltered situations.

## GRAPES.

But if the lands bordering upon the Rio Grande excel in any one specialty, it is as a grape growing district. The time is rapidly approaching when the wines of New Mexico will be recognized in the wine catalogue of the country. In no section of the United States does the vine attain a greater degree of perfection, California not excepted. This is due to certain characteristics of soil, climate and nature of the Mission grape, the variety in common cultivation in New Mexico. This grape is supposed to have been introduced from Spain by the Spaniards in the sixteenth century. It is a prolific bearer, and yields a wine which, the first year, compares favorably with the best Burgundy of the same age. The second year, however, a change occurs under favorable circumstances, when it loses much of its coloring matter, and reaches a point of excellency unexcelled by American wines. It resembles in aroma and strength the best brands of sherry.

In the year 1880, in a small field in the vicinity of Socorro, 400 plants yielded six barrels of forty-two gallons each. The soil best adapted for the propagation of the vine and production of wine has been demonstrated to be a light, loamy, gravelly soil. Good one-year-old wine sells readily at from 75 cents to $1 per gallon; the older wines commanding prices subject to age and quality, in some instances selling at $2 per bottle. Considerable demand exists for wine vinegar, which is manufactured to some extent.

## OTHER CROPS.

Of the other crops which succeed well, and the cultivation of which would prove remunerative, we will enumerate hemp, flax, hops, tobacco, cotton, broom corn, castor beans, opium poppy and sorghum cane.

All kinds of poultry do remarkably well, and are not subject to the many diseases which prove so fatal to the interests of the eastern fancier.

Some efforts have been made to propagate the silk worm in the Rio Grande valley, and have met with success. The mulberry tree secures a vigorous growth and attains goodly proportions in a short period. If more attention was bestowed upon this industry, we see no good reason why it should not pay here, where the climate is so well adapted to the purpose, as it does in less favored sections.

In conclusion, we will say that Socorro county presents an inviting field to the immigrant. Here he finds a combination of advantages seldom offered by any one section, cheapness and fertility of land. No rains excepting those which fall during the rainy season, and they as a rule are of little consequence. No drouths to jeopardize the crops, absence of depredating insects, a constantly increasing demand for farm and garden products at figures never reached in the East, safety of life and property, an abundance of water for irrigation and for all other purposes, of excellent quality; a mild climate, both winter and summer; an invigorating atmosphere, a health-restoring climate, and daily mail and express communications. The county has passed through its frontier existence, and presents to those who desire to take up their abode with us all those refining, intellectual and religious influences which constitute the charm of an eastern life.

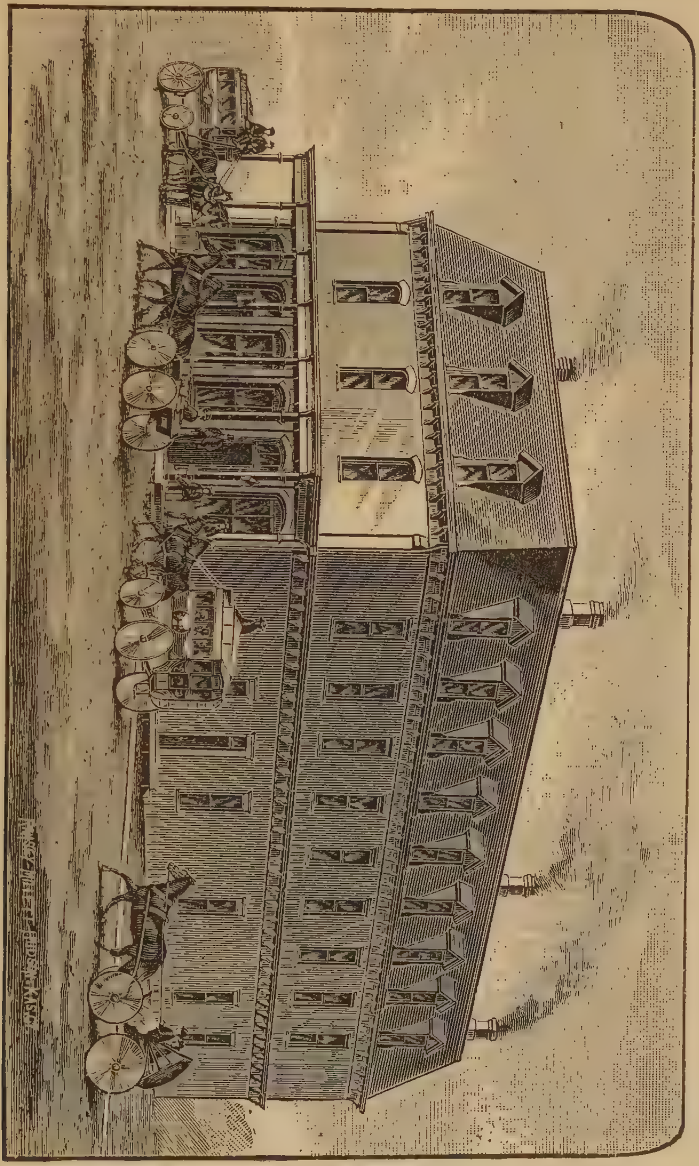
## STOCK RAISING.

It is estimated that Socorro county contains 4,000,000 acres of grazing lands possessing water privileges and frontage. Some idea may be drawn of the progress attained by this great industry, when we perceive that at the close of the year 1882 this county contained but 9,000 head of cattle, and now, according to the estimate of a responsible firm, and dealers in cattle and stock, 70,000 head of cattle graze upon our mesas, an increase of 61,000 in two years. Upon the other hand, we note a decrease in the sheep industry, for at the close of 1882, 300,000 sheep grazed in this county; at this date the number has decreased to 100,000. This is due to the fact that the area embraced in this county presents special advantages and characteristics for the raising of cattle and horses, so much so, that it has absorbed the sheep industry. Upon the other hand, many of those who possessed flocks have abandoned their occupations owing to the low price of wool.

In estimating the grazing area of Socorro county, we only included that in the vicinity of water in sufficient quantity to maintain stock in good condition, but if to this number of acres we add those which possess the probability of being soon placed in a position to afford water by the digging and boring of wells, thus furnishing a supply of water for stock, the area will be increased to 6,000,000 of acres. The introduction of the drive well upon the San Augustine plains, has resulted in securing an abundant flow of pure water at a depth of from thirty-five to forty feet beneath the surface, and like enterprises in the Journado del Muerto, (Journey of Death,) have also resulted in obtaining the much-needed water supply. That which is possible in the Journado del Muerto, one of the most arid and desert sections of the Southwest, would be equally certain in numerous more promising localities in Socorro county and New Mexico, but now deserted, though covered with nutritious grasses, owing to the absence of water. The great success which has met the efforts to discover water upon the mesas of this county, pardons the use of the aphorism that New Mexico is one of the best-watered sections of the country. But this supply of the life-giving fluid, which is destined to materially change the aspect of this Territory, does not appear as the sparkling brook of which poets sing, that ripple and dance in the sunlight over pebbles and boulders, but in subterranean streams, which, by the magic wand of the energy of man, will ere many years expire clothe the arid sections of this Territory with a coat of verdure and bloom.

It is estimated by experienced cattle men, that 500,000 head of cattle can find subsistence within the limits of this county. Those engaged in the industry are emphatic in their expressions when they say that this county presents all of the necessary characteristics for the propagation and fattening of cattle. The principal grasses which abound consist of the white and black gramma, bunch grass, red top, wild timothy, oat and wild rye. The most universally diffused of all these varieties, and the one most nutritious, is the white gramma.

To the Central Cattle Association of New Mexico, with office in Socorro, is in a great measure due the expansion which this industry has experienced within the past two years. Nor must we forget the great influence exercised also by the adaptation of our climate, the nutritious qualities of the grasses, and the perfect peace which we enjoy, the result of obedience to the laws and the mandates of the courts. The county is in a prosperous condition, the debt is slight, and the taxes light. When the census was taken of the population in 1880, it was found to be about 8,000 souls. Now over 3,000 children of school age are enrolled, which indicates a healthy increase. The people are thriftier, better and happier, and a material improvement is apparent in every branch of the great industries which form the basis upon which the great future of Socorro county will be erected.



WINDSOR HOTEL, SOCORRO.

## CITY OF SOCORRO.

The incorporated City of Socorro, and seat of the county, is situated in about the geographical center of the fifty-three mining districts in Socorro county. Its population reaches 3,500 souls. Public schools and an academy for young ladies are now engaged in diffusing knowledge; and Socorro College, recently completed, awaits a faculty before throwing its doors open for the admission of male pupils. The following enterprises are under way, with a promise of early completion: A court house, county jail, bridge across the Rio Grande, and water works The court house, when completed, will be a two-story brick edifice, and a credit to the Territory. The construction of the bridge, which will be completed at an early day, will have the effect of materially increasing the commercial relations of the city, and will offer uninterrupted communication with the important and heretofore much neglected mining districts situated upon the eastern shores of the Rio Grande. It will, in addition, provide the city with a cheap coal supply. It requires no stretch of the imagination upon the part of one to foresee the great future which awaits the gem city of the Rio Grande, surrounded as it is by practically unlimited quantities of good coking coal, iron, building stone and lumber in sufficient quantity, found in several of the surrounding mountain ranges, to meet all demands for years to come, and the numerous mining districts ready to pour their treasures of mineral wealth into the hands of our smelters and mills for treatment.

# TAOS COUNTY.

BY WM. L. M'CLURE, COMMISSIONER.

Taos county, of all the counties in the Territory is among the most favored of God and the least of man. It embraces a superficial area approximating 4,000 square miles, fully one-half of which could be put under cultivation by systematic irrigation; while actually, not over 100 square miles or one-fortieth of the whole area is being cultivated.

## THE SOIL

In the eastern portion of the county is a sandy loam underlaid with a lime drift. In the western half it is sandy loam containing a great deal of potash, resulting from the decomposition of lava rock through the agency of water. The county seat is situate in a basin which at one time was a large lake, probably of the tertiary period. The Pueblos and Mexicans have been cultivating mother earth in these parts for centuries with a forked stick, yclept plow, and she is as fruitful to-day as she was in her virginity. The waters of irrigation hold in solution the mineral salts derived from the disintegration of different rocks in the mountains, which are so necessary to replenish a soil that is being cultivated.

## THE CEREALS,

except rye, are all grown here. Spring wheat, corn, oats (white and black), and barley, are regularly raised. Potatoes thrive excellently in the mountain valleys and side-hills of the mountains, without irrigation. All root crops, such as onions, beets, cabbages, turnips, parsnips, etc., grow to perfection. Beans and chili, the national dish of Mexicans, are natural to the soil.

## WATER COURSES.

The Rio Grande runs through the county in a nearly north and south course, cutting the county a little to the west of the middle. The eastern portion of the county to the east of the Rio Grande is the best watered of any like tract of land in the Territory. From the most northern point, Costillo, to the south line of the county, no less than twenty creeks and rivers empty into the Rio Grande on the east. This is an average of one to every four miles. This eastern half of the county is thus preëminently adapted to agriculture; while the western half is equally so for grazing. Three hundred thousand head of sheep belonging to citizens of this and adjoining counties are now grazing there.

## FRUIT.

Wherever tried here fruit has, with the exception of peaches, proven remunerative to growers. But the isolated position of the county and remoteness from railroads have worked to our disadvantage in the way of bringing in trees and shrubs, at a price within the reach of our people. The few, however, who have obtained and planted trees have met with exceptionally good results. The fruit raised is the juciest and freest of worms of any in the world, while the flavor is unexceptionally fine.

## CHANCES.

This county has some fine places open to some enterprising men who would like to engage in dairying or poultry raising. Not a pound of butter is made for export; not a spring chicken has ever gone out to sing the praises of his native county; while the living streams of limped and ever-cool water and the inviting shade are awaiting these industries. As an instance of profits that might accrue, eggs are never less than twenty cents per dozen and butter fifty cents a pound.

## WHO WE ARE.

The most of us are to the manor born, Americans of the Mexican race, and love peace, are hospitable in our homes, and somewhat behind in modern methods of farming; yet are progressive, and evince a lively interest in learning and falling into better methods. Wherever we have had a chance, through contact with better methods, we have improved.

## THE CLIMATE

is the loveliest under the sun, from April to November inclusive of each year. During these eight months existence is a luxury. If its beauty were known East, we would have to build on an addition to the county.

## MINES.

The cañon of Red River, Rio Hondo, Arroyo Hondo and Picuris Mountains have been so far prospected as to make them permanent camps. The ores are generally copper and galena, but of too low grade to bear transportation out. The precious metals are formed sparingly in the copper, iron and lead ores. There is enough hematite and spathic iron in the county to meet the prospective wants of the Territory for all time. The presence of coal near by assures us that at an early period our low grade ores, which are so abundant, will be smelted at our very doors. The copper ores are especially easy of reduction, occurring as carbonates and oxides, with, sparingly, some copper pyrites. At several places in the county are extensive deposits of kaoline or porcelain clay, as well as fire clay, which at no distant day will insure a fortune to a good potter.

## SANITARIUMS.

See page 66.

## TIMBER

is abundant in the mountains adjoining, ample for fire-wood and building for a great many years. Lumber in the rough sells here for twenty dollars per thousand feet.

## TAXES.

are extremely low, on a valuation of one-half to two-thirds; never over one and one-half per cent.

## IN GENERAL.

The average altitude is about seven thousand feet. Game is very abundant in the mountains. We have bear, cougar and deer *ad libitum*, while all the streams and lakes teem with trout, the most delicious of all fish. Snakes are very rare; the venomous kind are unknown. A saddle of venison fetches fifty cents, and trout dressed twenty cents per pound. Eatables of all kinds are as cheap as in any of the States.

Security for life and property is as good here as anywhere in the United States. Religious intolerance does not exist. While a large majority of our citizens are Catholics, still the Methodists and Presbyterians have established societies and quite flourishing schools, and all seem to be laboring for the welfare of mankind.

About public schools I cannot speak so favorably—the great lack is teachers and funds to carry them on. The public interest in schools is growing, and we hope under the recent school law for a better system.

We want enterprising immigrants, with some capital, to engage in the productive industries, and they will be sure of a hearty welcome. A woolen mill is most sadly needed. Our water-power is unlimited, and the streams never freeze in winter. The water runs so swift that Jack Frost can't catch it. About three hundred thousand pounds of wool are marketed every year by citizens of the county.

## HOW TO GET HERE.

Our nearest stations are on the D. & R. G. railway, at Embudo, twenty-eight miles south of the county seat, and at Springer station, eighty miles east on the A. T. & S. F. railway.

To the sight-seer and tourist who may be looking for a cool and delicious climate, and water that never stagnates, come and enjoy a "siesta" under the spreading branches of the "mañana tree," and I will guarantee my whole salary, as commissioner, you will never regret the trip.

The antiquarian and archæologist can find here in the Pueblo Indians a subject worthy of the profoundest research. The naturalist, geologist and mineralogist will find an ample field for their studies.

The prospector who does not expect too much will find the field only partially prospected.

In conclusion, we want everybody who has means and brains, and has the well being of the country at heart, to make his home in Taos county.

Ex-Commissioner Camp, of Taos, records:

"The wheat raised is of a superior quality. The berry is exceedingly large and plump; a bushel of the same will average in weight from sixty-five to sixty-eight pounds, the latter weight being by no means uncommon. The ordinary yield per acre is from fifteen to twenty-five bushels, while, under special care in cultivation and irrigation, a yield of sixty-five bushels has been reached.

"It is one of the few sections of the Territory that is adapted to the growing of potatoes. Vegetables of all kinds grow to astonishing size and perfection. * * *

"The amount of land under the plow does not exceed one-seventh of the available area adapted to cultivation. * * *

"While much of the land under ditch is held under grants, it can in many cases be purchased at reasonable figures, carrying with it the right to use the present acequias or ditches."

Ex-Commissioner Gusdorf, writing since the above, fully confirms the yield of wheat above given, and also reports the yield of potatoes in the mountain parks at sixty bushels to the acre without irrigation.

## MINES AND MINING.

The following named mines were represented at the Santa Fe Tri-Centenary Exposition by G. Mathieson, and by him reported, to wit:

### COPPER HILL CAMP.

*Desoto* is high in silver and gold, and ten per cent. copper, and has a 400-feet tunnel.

*Asiatic* bears silver and gold, and copper glance; has fifty feet development; assays $300.

*Missouri* has a four-feet vein copper, silver and gold-bearing ore, in which it assays high, and 125 feet development.

*Champion*, *Ruby* and *Royal Purple:* Copper bearing, and fifteen to eighty per cent. assay of gold and silver. The Champion has free gold.

### ARROYO HONDO—M'GREGOR CAMP.

*Chicago* (and ten other locations) bears galena and silver; has 350 feet of tunnel, and 100 feet of shaft.

The following mines are galena, carrying silver, and assay $300, and mill run averages from $80 to $125:

The *Evening Star* and *Lima*, with each a development of fifty feet, and the *Alabama*, with 100 feet tunnel.

*Dora Newell* and group are galena and silver, assaying from $100 to $300, and a mill run from $80 to $125; 200 feet shaft and tunnel.

The *Picores* tunnel, *Shistose* tunnel, *War Eagle* and *Sunset*, average assays of $40.

### RIO HONDO CAMP.

Eight locations of Anderson Bros. have 400 feet development of tunnel and drifts; ore, quartz carrying free gold; assay averages $20.

Twenty locations of Fraser & McCreary have 750 feet development; ore, silver, lead and gold-bearing; assay good.

Twenty locations of Wm. Fraser, on the divide, have 300 feet development; mineral is carbonate and oxide, carrying copper, and some silver and gold. They are fine properties for copper.

*Victoria*, "4-11-44" and *Guyena*, have eight-feet vein of gold and silver-bearing ore, in carbonates, and has an open cut development; no assay.

Six locations of John Royal & Co. have fifty feet of prospect shaft, and show gold and silver, in oxide of iron; assay from $20 up.

### SAN CRISTOBAL CAMP.

*Miner's Dream*, and five locations adjoining: Five-feet pay streak, in ten-feet vein of free-milling carbonates of lead, carrying gold and silver; development, 120 feet shaft, 110 feet drifting, and a twenty-feet open cut, and assays $35 average. Yellow ochre of bismuth is found in the drift.

*Crœsus:* Ten-feet pay streak of black oxide and magnetic iron, carrying copper, silver and gold; ten feet development. Pueblo smelter returns show 18½ per cent. copper and $8.00 silver, per ton. A New York assay shows $39 90, $53.00 and $90.00 in silver. Will mat itself. This ore gives the best of flux for reducing other ores, and will be in demand accordingly.

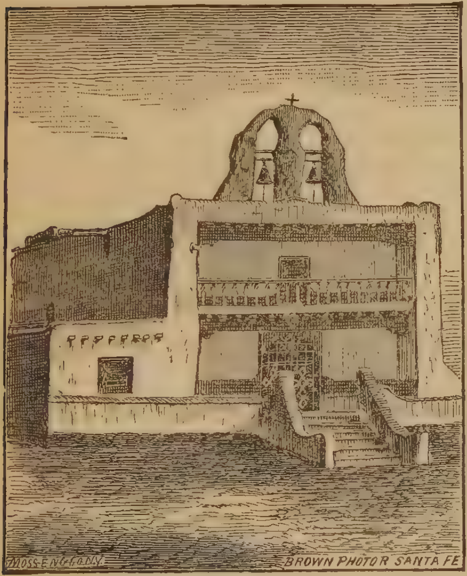
### RED RIVER CAMP.

*Waterbury:* Seven-feet vein of ore, bearing copper, silver and gold; has 175 feet of development. Assays of copper average 25 per cent. Mill run of 200 pounds gave 13½ per cent. Owned by a Chicago syndicate.

# VALENCIA COUNTY.

BY GILBERT SCUDDER, LATE SECRETARY BUREAU OF IMMIGRATION.

At the present time but little is known outside the Territory of the resources and advantages of this, one of the oldest and largest counties of New Mexico. Situated nearly in the center of the Territory, and having the advantage of two trunk railways recently constructed and traversing the county at right angles, it possesses unusual attractions for the farmer, stock raiser and miner. Its mineral resources have as yet received but little attention, but as soon as the prospector and capitalist shall commence their operations in earnest, its future as a mineral and stock-raising district will be established. Some mineral claims have been located, but no development of any consequence has been done. In the Manzano range there are some prospect holes, mostly dug by the natives, which show undoubted evidence of containing gold, silver, copper and lead, and in paying quantities, the one thing needed being capital to develop it. Only three districts have been prospected to any extent, to wit: The Ladrones, Spiegelberg Springs and La Joya.


MOSS-ENG-CO.N.Y.
BROWN PHOTO R SANTA FE

EARLY CHURCH OF THE SPANISH REGIME.

The Ladrones mountains are undoubtedly one of the largest deposits of low-grade ore ever discovered in the Territory, and to be worked profitably it must be on a large scale which requires capital. For a steady and reliable profit this camp is well worthy the attention of capitalists. The ores are prinpally galena, carrying considerable lead and some copper.

Spiegelberg Springs is a young camp, but gives promise, with development, of being one of the best copper-producing districts in the Territory.

The La Joya Mining District, east of and near the Rio Grande, is situated in the southern part of the county. The ores are principally galena, carrying large deposits of silver and gold which can be easily milled, and the work already done on the lead proves its presence in large and paying quantities.

The Atlantic & Pacific railroad, or thirty-fifth parallel road, runs nearly two hundred miles in a westerly direction and centrally through the county, and connects the Santa Fe railway system in the valley of the Rio Grande with Arizona Territory; thus bringing within easy reach its immense coal fields, pastoral ranges and agricultural valleys. These coal fields are already being worked in places with most satisfactory results, and now that the Indian question has been virtually set at rest, considerable herds of cattle and flocks of sheep are being driven upon the public domain, although but little of the latter has been entered at the land office. This county, it will be understood, also possesses the advantage of having the entire western half free from land grants, and, as it covers an area of over 9,000 square miles, there are very large tracts of Government land still open to entry, and well adapted to stock raising and homesteads, and upon which coal and mineral prospecting may be engaged in with profit.

## SALT.

About twenty miles east of Manzano are immense salt lakes, where large deposits of excellent white salt are found, and which can be had free for the carting. Salt works, established for its refinement, would prove very profitable, and most of the Central and Pacific States and Territories would afford an easy market for its disposal. Let a few enterprising capitalists avail themselves of the opportunities here open, and Valencia would soon be as much sought after as are now her luckier and better known sister counties.

## STOCK RAISING.

The following is from the pen of the late Charles A. Kusz, Commissioner:

This is without doubt one of the finest stock raising regions in the world, in its natural advantages. Its climate is temperate, dry and healthy, the summers are long, without being hot, and the winters short and mild, being tempered by the mountains, mesas and timber. The extensive plains are covered with gramma grass at all seasons of the year. The gramma (chiva) is another and better kind of grass, that grows in great abundance on the mesas, hills, and in places on the plains, which, as it cures in the fall, furnishes the most nutritious food for the stock all the year round. On the plains and mesas are also vast areas covered with chamisa, a shrub on which the cattle feed and fatten. It is very heating, and in that respect makes a very superior winter pasturage, and stock are very fond of it. In this climate, and with these three varieties of feed, no kind of stock ever requires to be fed or sheltered, neither summer nor winter, except the protection which the timber affords. And just here we may say, that stock have never been known to perish for want of natural pasturage and shelter.

## SHEEP RAISING.

We have given some of the leading advantages of cattle raising in this county, and the same reasons apply with equal force to sheep raising. They live and thrive on the grasses so abundant here, besides the mast which the heavy growth of piñon, oak, cedar and wild cherry affords. The sheep being remarkably free from all diseases, the increase is very great. On account of coyotes and other wild animals, the sheep are always under the care of shepherds, with good dogs. The range being very extensive, as we have received but little immigration, they are constantly on the move from one watering place to another, camping wherever night overtakes them, the shepherds sleeping in the center, surrounded by their flocks, while the faithful dogs keep watch on the outside. They are sheared twice a year, in the spring and in the fall, and the market, both for sheep and wool, is always good.

## STOCK RANCHES.

Most of the best locations where there is good running water, springs or lakes, have been taken up, but some of these can be bought very reasonably, while others are held at a higher figure. Still there are thousands of acres of fine grazing lands unoccupied, that have all the advantages for stock ranches except water, which can easily be procured by sinking wells from six to fifty feet deep, putting in pumps and windmills.

## FARMS.

These are still to be had, by location and compliance with the Government land law, either in the timber or on the prairie. There are extensive valleys of black loam, adjacent to timber, and vast areas of the richest farming lands on the prairie. I know of some lands, that have been cultivated by the natives for nearly one hundred years, which are producing well yet—onions weighing from one to five pounds; beets, from ten to fifteen pounds; cabbages, as high as fifty pounds each; wheat with grains nearly as large as grains of corn, and other crops correspondingly good. Yet these lands have never been manured, nor have they been more than half cultivated. It is proper to state, too, that vegetables and the grains raised on these lands are not, as in some countries where the growth is enormous, of a coarse and otherwise inferior quality, but they are in all respects equal to any grown anywhere in the world. The timber lands are covered with a heavy growth of piñon and white oak, which affords plenty of mast for the raising of hogs and poultry. There are here at present, during the winter, hogs running loose with no other feed than the acorn and piñon, and they are fat enough to butcher. In the timber adjacent to the mountains and mesas irrigation does not seem to be necessary, as farms in these localities produce continually without any irrigation.

## LUMBER.

We have extensive forests of pine, which offer great inducements for the erection of saw mills, shingle and lath machines. A great deal of the timber is extra large, being from two to four feet in diameter. The numerous railroads in course of construction in different parts of the Territory, and the many towns springing up along their lines and elsewhere, make a good market for lumber, lath and shingles.

## FLOUR AND GRIST MILLS.

As the country is very young, there are very few flour and grist mills, and there is a chance for a good investment on the large or small scale. In parts of our county grain has to be hauled from seventy-five to one hundred miles, and then the tolls for milling are from one-third to one-half.

## SOAP.

Amole (*Yucca angustifolia*), a soap weed, abounds in this county. The natives here use it almost entirely in the place of soap, simply pounding up the root and washing their clothes with it. For washing woolen goods, silks or any fabrics with delicate colors, it is unequalled by any soap in the world. By experiment, we have also found it to make a very superior toilet soap, having great healing as well as cleansing qualities, and leaving the skin very smooth and pliant. We find, too, that it makes an excellent hair invigorator and shampoo. Capitalists will do well to investigate this matter.

## MINING.

We have in this county no regularly organized mining districts. The prospector and miner has hardly made his debut with us, although we have an immense field for the enterprising, not only for the practical miner and prospector, but for the capitalist as well. The Manzano range has, perhaps, not a singe ten-foot shaft—a few holes two to three feet deep, dug by natives, is about all the development there is done in this county; although in some of these "holes in the ground" there are excellent prospects for copper, silver and gold, while on the mesas immense "mountains of iron" can be found, that, without doubt, as in Lake Valley and Percha Districts, and the famous Leadville, Colo., mines, are the cap rock to rich deposits of silver, lead and gold. We have also large coal fields that are still undeveloped, and could be utilized if the right man took hold of them. We want capital to aid the prospector in looking up these interests and the miner to develop these hidden treasures, and if capital will but take hold, we feel confident that it will be rewarded by rich harvests of gold, silver, copper, lead and coal. We also want the prospector and practical miner to come, for they are the life and soul of a mining camp, and without them capital can do nothing. That even the ancients or prehistoric nation that were the inhabitants here, before the advent of the Spaniard, knew of the immense wealth in nature's store-rooms —the mountains, hills and mesas—is evidenced by the "old mines" that have been found, caved in so that nothing can be seen except by the cleaning out of these old workings; also by the ruins of old smelters, where the slag can still be found in the vicinity.

## ARCHÆOLOGY.

As though to gratify the taste of archæologists and antiquarians, and even the less pretentious tourist, our country is dotted on the mesas, hills, and even on the edge of the plains, with the ruins of prehistoric cities, towns and villages, the inhabitants of which lived, thrived and went to ruin without the knowledge of the outside civilized world. Connected with these ruins, the natives cherish with almost superstitious regard the most extravagant and romantic legends, some of them very pretty.

A GOLD Dealer, SANTA FE
MOSS ENG. CO. N.Y.

PUEBLO POTTERY.

## MISCELLANEOUS.

We have also in this county immense and inexhaustible deposits of fire and potter's clay, suitable for the manufacture of fire brick, assayer's smelting materials, and pottery of all kinds; also miles and miles of deposits of the finest gypsum (sulphate of lime), that only needs burning in a common camp fire to make the finest quality of plaster of paris. The natives use it for white-washing their houses, and it makes a beautiful, snow-white finish on top of the rough mud of which they build and plaster their houses.

# HISTORIC NEW MEXICO.

In July and August, 1883, there was held at Santa Fe a Mining and Industrial Exhibition* of the resources of the Territory, combined with street parades in character, Indian dances, and dramatic and tableau personations of its various epochs of nationality, from the prehistoric tribes down to the present, and all in honor of the first coming of the European to this then very remote country, known as Aztlan.

As has been heretofore shown in these pages, the pre-Columbian village Indian of the Southwest possessed many of the characteristics and habits of civilization; and that according to early Spanish and other authorities, and the legends and folk-lore of the country, it is reasonably certain that it was the home of the Aztec tribes prior to their migration to and settlement of Anahuac or Central Mexico.

At a mass meeting of the people of Santa Fe, preliminary to this historic exhibition, held at Alhambra Hall, Santa Fe, in January preceding the same, the Hon. Wm. G. Ritch, upon being called to preside at the meeting, made the following remarks, and which remarks were at the time printed and given general circulation by the Anniversary Association, under the heading of "Why we Celebrate." The remarks were none the less important as a faithful resumé of the early history of New Mexico, than they were a comprehensive reason for the celebration. Following a few preliminary remarks, Mr. Ritch spoke as follows:

## EARLY EXPLORATIONS.

The objects and purposes of an historical celebration certainly cannot find a broader or grander field than in this, our own Territory and home; nowhere upon this great continent can be found a history more replete witn heroic adventure, of more thrilling interest, or of greater antiquity than in New Mexico, of which Santa Fe is the central figure and most ancient capital city in all this broad republic.

Away back in the sixteenth century a remnant of a party of explorers found themselves stranded, wrecked and destitute, upon the western shores of the Gulf of Mexico. This party was Cabeza de Vaca and three companions. Thousands of miles of a trackless wilderness, then wholly unknown to Europeans and beset with savages, lay between this small party and their Spanish brethren in sparsely settled Mexico. Nothing daunted, this intrepid little band, with nothing more of this world's goods at their command than the indifferent clothing which covered their nakedness, but with indomitable will, endurance of steel, and their own good tact, entered upon the hazards of traversing this unexplored and

---

*The Exhibition Association bore the corporate name of "The Santa Fe Tertio-Millenial Anniversary Association." Its chief officers, under whom it was managed and carried through, were: Wm. W. Griffin, President; Arthur Boyle, Secretary, and Charles W. Green, General Manager.

## TRACKLESS CONTINENT,

in the forlorn hope of reaching their countrymen and friends somewhere upon the other side. The undertaking antedated any permanent European settlement within the bounds of what has since become our own beloved country, the United States. It was less than a decade later than the conquest of Mexico by Cortez, and nearly a century previous to the landing of the pilgrims upon the shores of Massachusetts Bay, that these Spartan souls departed upon the most wonderful and successful journey known to the pages of history. The point of departure was upon the gulf coast of either Louisiana or Texas, as known to modern geographies.

These wanderers traversed by turns the tangled swamps and bayous of a semi-tropical latitude; the deep, turbid rivers and dense forests of the coast slope; the vast, arid plains, coursed by canons of dizzy depth, and towering, rugged mountains and rushing torrents of the interior; and finally crossing the alkali plains, sandy desert and coast range, before beholding the blue waters of the Pacific. They lived upon roots and lizards when naught else could be found, and slept with the canopy of heaven only as their covering, except as varied by the elements, and ever upon the alert for wild beasts and hostile Indians.

## TRAVERSING THE STREAMS

to their head-waters northwest from the gulf, and as laid down upon the maps of the early voyagers, Vaca and his companions, after many months of weary travel, reached the waters, according to some writers, of the Canadian; thence pressing forward, and after three months of uncertain wanderings reached the Pueblo Indian villages of New Mexico, twenty degrees of latitude north of the city of Mexico. Memorable event! Here first came to the knowledge of inhabitants of the old world the existence of a people living in permanent houses and homes clustered in villages, following the pursuits of peace by tilling the soil, the administration of wholesome laws, in making provident care for possible famines, and in showing kindness and hospitality to these pale-faced strangers in distress. The people thus met and described by Cabeza de Vaca and his companions correspond with those who were found and described by subsequent explorers in New Mexico, upon the slopes of the Rio Grande, at Santa Fe and at Zuñi. These were the first towns, the first permanent settlements of a people possessing habits of civilization, within the borders of this great nation of free people, and who had thus attained to their estate many generations anterior to the landing of Columbus. The same distinctive people, with the same habits, although greatly reduced in numbers by wars aggressive and defensive, still constitute an important element in the population of New Mexico in this last quarter of

## THE NINETEENTH CENTURY.

Furnished with supplies and such means of comfort as was possible for this small party to carry with them, after still another period of wandering, in all probably five years, they arrived in the spring of 1536 at the town of San Miguel, upon the west coast of Mexico, and in May following reported to the viceroy at the city of Mexico. The stories of Cabeza de Vaca, about a great people living in towns and cities far to the north, were in confirmation of traditions and statements previously made by the native Mexican people. As a consequence expeditions were at once fitted out—the first under the lead of Friar Marcos de Niza, who took with him as a guide Estevan, a blackamoor, and one of Vaca's party.

Niza only reached the Cibola country (Zuñi). Estevan had preceded him a few days, and was the first to arrive at Zuñi. His indiscretion cost him his life, and came nigh bringing the whole party into difficulty, and making the return of Niza a necessity. The report of Niza was confirmatory.

The expedition of Coronado, Governor of New Galicia, under the patronage of the viceroy, followed in 1540, with assured hopes of finding great stores of gold and silver among the people, as had been found by Pizarro in Peru and by Cortez in Mexico. The expedition was composed very largely of scions of royalty and persons of refinement and wealth, most of whom were illy prepared to withstand the toil and endure the privations inseparable from the journey.

### THE EXPEDITION,

however, arrived in good spirits at Zuñi. Coronado's journal speaks of here meeting hostile demonstrations, and likewise relates of discovering cities larger than Granada, in Spain; of one town containing 500 houses of stone, some of them five lofts high and excellent construction, and of another still larger; of the people complaining of Estevan, and of their killing him because of insulting their women, whom "they loved dearly." The food of the people was corn, peas and venison. They had good salt, wore turquoise, emeralds and garnets for ornaments, made cloth, had mantles of cotton, painted, and other articles of dress, which were embroidered in needlework. Water was brought then as now in irrigating ditches, to their fields of corn and vegetables. Coronado also tells of finding gold and silver that was good.

The explorers, passing Zuñi for the east, passed "Acus" (Acoma), a town "upon an exceeding strong hill," whose people grew cotton. From thence they journeyed to the province of Tiguex, located upon the banks of a great river, where he found large mantles, feathers and precious things, and where they grew melons and white and red cotton. Near here they wintered.

Their anxiety to obtain the precious metals was more than apparent, and misgivings and discussions followed. Diplomacy among the natives was exhibited by assurances which encouraged them to look for gold and silver in a country far beyond. By this means the Indians got rid of an expedition which had quartered itself upon the country, intending to remain during the season.

It was thus that Coronado was induced to extend his trip far to the northeast, visiting Cicuyé, *en route*, designated by the more reliable authorities as the well known pueblo of Pecos. He extended his explorations to a province called "Quivira." Lecturers and writers upon the subject in various States and localities have been ever ready to catch upon the descriptions of the country given in the journals of the expedition, and who ingeniously credit their locality with being a seat entitled to a chapter on early Spanish explorations. Thus, Nebraska has a theorist who claims that the southern and central portion of that State was the remotest point reached by Coronado. Another theory locates Quivira, the outlying terminus of the expedition, at or near Kansas City; while still another locates the province further south, possibly in Arkansas. However all this theorizing may be, there is no doubt about Coronado having extended his march far to the northeast, over treeless plains, where quantities of buffalo roamed, extending, no doubt, to some point well toward, possibly upon, the Missouri river. Wherever Quivira may have been located, we are told that there he met "Tatarrax, the king of the province," and that his people gave no greater sign of being possessed of the precious metals for which they were in search than a "jewel of copper about the neck of the king." The men of Quivira lived principally on buffalo meat, slept in tents made of buffalo hides, wore shoes and clothing made of buffalo leather, and "wandered about like the Arab." Coronado, disheartened, and his companions sorely disappointed, returned after two years to Mexico; stores of gold and silver had not yet been gathered from

### THE MINES,

although known to exist, but not as found and appropriated without labor by Pizarro and Cortez. Had Coronado prospected, and have set his men at work upon the mines after the manner of this generation, he could have made returns far exceeding the wealth of his time.

About 1581, Rodriguez, with a company of Franciscans and an escort of soldiers, came up the valley of the Rio Grande certainly as far as the province of Quires, the pueblos at and some of them near Santa Domingo; and he, no doubt, extended his visits to the east and north, for he remained in the country several months, even after his escort had abandoned him. Upon the return of the escort to Zacatecas without Rodriguez, Espejo became interested in his fate, and late in 1582 departed in search of him, and incidentally to learn of the country. He journeyed by way of the Rio Conches and the Rio Grande to Paola pueblo, near Bernalillo, where he learned of the death of Rodriguez and his companions at the hands of the natives. Continuing, he visited other pueblos in the vicinity, and made an expedition to Jemez, Zia, Acoma, Zuñi, and beyond. Espejo, being less aggressive. encountered much less opposition from the Pueblos than Coronado, and refers to them in terms of commendation for their habits of industry, cleanliness, government, and hospitality to the extent of supplying his command for days with subsistence, and for the substantial character of some of their towns and market places. He also refers frequently to seeing gold and silver, and of taking the metals with his own hands from a mine near Zuñi. Returning from the latter place to Santo Domingo, he journeyed twelve leagues to the east, to a province having several villages and 25,000 people, where

### HE FOUND MOUNTAINS

covered with pine and cedar, and mines that he visited and took therefrom "shining, good metal." The point thus visited, from the description, no doubt was at or near Galisteo, in Santa Fe county. Here he learned of a province a day's journey to the north called Tanos, containing, as stated in the report, 40,000 people. Espejo undertook to visit the latter province, but his force being small, and meeting opposition in force, he abandoned his purpose and immediately returned to Mexico, going down the Rio Pecos. This was early in the month of July, 1583, just 300 years ago from next July, the time appointed for the proposed exposition and celebration.

We have thus a date certain of Espejo's explorations in New Mexico and Santa Fe county, and an account of how he attempted to visit the Tanos pueblo (Santa Fe), and according to tradition, the center of operations among the Pueblo Indians.

Santa Fe, then, as now, was a strategic point, of easy access from towards Taos and San Juan pueblos to the north, Pecos to the east, San Ildefonso and Santo Domingo upon the Rio Grande to the west, and from the group of pueblos south, and at Galisteo.

Juan de Oñaté came with a colony in September, 1598, and first located at Chamita, upon the west bank of the Rio Grande, where Rio Chama empties into the former, and established a mission at San Gabriel (now abandoned), and which, according to Bandelier, was located where the Rio Ojo Caliente empties into the Rio Chama, a few miles above its junction with the Rio Grande.

### ONATE WAS THE FIRST GOVERNOR OF NEW MEXICO.

The settlement of the Tanos, or Tegua, and also called Poga, made by Europeans, followed almost immediately, under the name of El Teguayo, subsequently named Santa Fe, and was made the capital of the Spanish province of New Mexico. Except as interrupted by revolutions, it has continuously remained the capital to the present time, and also the center of civil, military, ecclesiastical and commercial operations.

This in brief is the early history of New Mexico, and the basis of the proposed celebration to be held in Santa Fe during the forthcoming month of July.

[From Santa Fe Daily Review, July 29, 1883.]

# THE SPANISH AND MEXICAN REGIMES IN NEW MEXICO.

Address of Hon. William G. Ritch, Delivered Monday, July 23d, 1883,
at the Exposition Building, Santa Fe, by Invitation of the Tertio-
Millennial Celebration Association, and Under the
Auspices of the Historical Society of New Mexico,
Hon. L. Bradford Prince, President of
the Society, Presiding.

*Mr. President, Ladies and Gentlemen:* I have been invited, without time for preparation, to address you upon this day formally set apart as the "Historic Day" in this celebration of the early explorations and colonization of New Mexico.

Following the eloquent words of our distinguished speaker from Illinois, upon a most interesting topic, before an audience largely composed of thinking people—strangers of liberal culture and broad information—I must at this moment confess to no little embarassment.

### ESPANO-AMERICAN PIONEERS.

In a former address, preliminary to this exposition and celebration, I spoke of the first explorations, and of the Spanish occupation of New Mexico. Continuing from where I then left off, I now propose to consider briefly and concisely the more eminent persons and historical events that followed.

First come the Espano-American pioneers. Oñaté, the first Governor, and a native of the province of Zacatecas, was the pioneer who brought the first organized colony for settlement. These colonists were nearly all enlisted from the same section of Mexico, and the colony was planted upon the Rio Grande above the mouth of the Chama.

The administration of Oñaté as Governor was during the formative period, and while beset with the trials and difficulties of the situation, these were no doubt met bravely and wisely. Many priests (Franciscan friars) came to New Mexico with Oñaté, and established various missions, among them San Gabriel, a few miles up the Rio Chama, and west of the present Indian pueblo of San Juan, and El Teguayo, the latter believed to be Santa Fe. Large numbers of the natives were baptized into the church. About this period Pedro Peralté succeeded Oñaté as Governor.

One of the main objects of the colonists was searching for and collecting the precious metals. While the latter were not found in New Mexico in ornaments and articles of utility, pure and free, at hand for the appropriating, as had been found and freely appropriated a half century or more before in Peru and Mexico, we are told that good deposits were found in the mountains near Santa Fe, and along the Rio Grande, not only of gold and silver, but likewise of lead, copper, iron, magnets, turquoise, salt, alum and sulphur. Labor, as known to the world to-day, was then regarded as degrading, and not to be thought of among gentlemen—among cavaliers and soldiers. Hence, when after a decade of colonial life in the new province, a proposition, favored by Governor Peralté, was made by a party of Flemish miners to introduce machinery, and which was finally introduced, accompanied by skilled labor and the industrial methods of Flanders, there were murmurings and opposition, which finally resulted in the

INCENDIARY DESTRUCTION OF THE MACHINERY

by fire. It is well to remark right here that slave labor, drawn from the Indian villages by treachery or violence, and so vividly discussed by Las Cases, was the particular system which then found favor in the Spanish colonies. This system was peculiarly unfortunate for New Mexico—for a people who, before Europeans set foot upon the soil, had perfected systems of irrigation equal to those in use to-day; who cultivated the soil, and spun and wove; and who were provident, had an organized government, and lived in permanently built towns.

Wherever this slave system was enforced, it brought with it revolt or rumors of revolt, in addition to that general absence of prosperity which is inseparable from labor degraded and prevailing idleness.

The administration of Governor Peralté was contemporaneous with the edict of Nantes, the birth of Cromwell, the discovery of electricity, and the invention of the telescope by Galileo, and antedates the landing of the Pilgrims on the shores of Massachusetts Bay, and the Thirty Years' War in Germany.

There were many governors and captains general during the early and central periods of the first century of

"THIS KINGDOM AND PROVINCE OF NEW MEXICO,"

as it is frequently called in old documents and books, of whom, however, there is but a trifle of definite or important knowledge, except in relation to the

OPPRESSIONS AND REVOLTS.

The holding of the village Indians to an entire subordination, and to that enforced labor and bondage of soul which enabled their conquerors, like all conquerors before them, to live for the time in indolent affluence at the expense of the sweat, blood and manhood of the conquered, brought its bitter and legitimate resentments and retaliations. In this connection one is peculiarly reminded of the inquiry of Shylock in his reply to Salavino. Queries this man of worldly wisdom: "If a Jew wrongs a Christian, what is his humility?" "Revenge." "If a Christian wrongs a Jew, what should his sufferance be by Christian example?" "Why, revenge." "The villainy you teach me I will execute, and it shall go hard but I will better the instruction." The application is, of course, apparent. Murmurings of dissatisfaction, amid patient waiting and endurance, became loud and deep, and finally culminated in that unsuccessful attempt at revolution in 1640, which proved to be the first of a series of revolts and warfare which continued, nothing daunting, through the remainder of the century. The immediate cause of the first of this long series of revolutions, as stated in Governor Davis' "Conquest of New Mexico," was the whipping, imprisoning and hanging of forty Indians, because, in brief, they would not change their religion. These sanguinary measures were no doubt the work of the Inquisition, the latter being supreme in the ecclesiastical jurisprudence of New Mexico during its great revolutionary period.

The penalties enforced against the revolutionists, it is due to state, were of much the same character as those given as the cause of the revolt. At this distance in time, humanity indeed yearns with sympathy at the sad condition of these village Indians.

The more important of the revolts that soon followed was that of 1650, during the administration of Concha, and in which five pueblos were united, including Isleta and Jemez, and the wild Apaches were their allies. The time for the uprising had been fixed for Thursday evening of Passion Week, when the Spaniards would be generally assembled in the churches for religious worship. The plot was discovered and defeated. According to Davis, in the crushing out of this revolt, the ringleaders were secured and nine of them hung, many imprisoned, and a number sold into slavery for ten years. Whatever may have been the condition of the country during the decade following 1650, the data is not at hand to furnish the facts. It is not to be supposed, however, that the gentle Pueblo lay slumbering during all those years at the feet of peace. His one central, ever present idea was to free the country of his oppressor. To this end he bent all his energies. And when Shea, in his "Roman Catholic Mission in America," expresses the opinion, as he does, that "the Territory must have been abandoned before 1660," there is strong probability for the belief, if Shea be correct, that the Pueblos had something to do with forcing that abandonment, although the contrary is claimed as true.

### THE INQUISITION.

The civil authorities seem to have been embarrassed by the interference of the Inquisition with at least two of the Governors. Quoting from Shea's Peñalosa, we are informed that "great complaints were made to the Viceroy against Don Bernardo Lopez de Mendizaval, Governor of New Mexico, whose greater crime was his falling out with the Inquisitors and their partisans. Nevertheless, he was recalled, and the Count of Peñalosa was selected in his stead, and to appease the troubles ordinary in that country."

### "COUNT OF PENALOSA" APPOINTED GOVERNOR.

Don Dionisio de Peñaloso (Count of Peñalosa), served as Governor from 1661 to 1664, and was in an eminent degree a strong man, and for this reason, no doubt, was appointed at the head of the government of a province beset with most serious complications. It was a situation which demanded wise statesmanship, and the new Governor proved himself the man for the occasion, for we are told that he "appeased the trouble in New Mexico, made war on the hostile Apache, whom he defeated and compelled to sue for peace. That he founded two new cities and erected public buildings."

### THE PALACE.

It may be added in parenthesis that it is not only possible, but probable, that the erection (after Assyrian methods) of the old Government buildings at Santa Fe, known as "the Palace," and still occupied by the various branches of the Territorial Government, was due to this Governor.

The distinguishing feature in the administration of Peñalosa, however, was his memorable

### EXPEDITION TO "MISCHIPI" RIVER.

This expedition, we are told, numbered eighty thousand, one thousand Indians, all well armed, eleven hundred horses and mules, thirty-six carts, and six three-pound guns. Peñalosa speaks of the Mischipi as a beautiful river, running through delightful prairies, and in part, at distances of a few leagues, through great forests. He, like Coronado, visited Quivera, made friends of some of the native tribes and chastised others, as the situation demanded, and altogether made discoveries of a great country, and of which he made a formal report to his government. The river referred to no doubt was the Missouri.

This expedition, it may be interesting to know, antedates Marquette and Jolliet's explorations in the Mississippi valley, was before LaSalle sailed up the Chicago river in an Indian canoe, and one hundred and seventy years before the foundation of the great metropolis of the great lakes.

Like his predecessor, Gov. Peñalosa became involved with the Inquisitors. Quoting again from Shea in this connection, we are informed that "the commissary general of the Inquisition assumed a boundless authority, and wished to dispose sovereignly of everything; so that, to check his tyrannical and extravagant enterprises, he (Peñalosa) was compelled to arrest him as a prisoner for a week in a chamber of the palace, after which he set him at liberty, in the hope that he would be more moderate in the future."

Returning to Mexico in 1664 to propose to the Viceroy the conquest of the Mischipi country, he was arrested at the instance of the Inquisition, and imprisoned for thirty-two months. His property was confiscated, heavy fines were imposed; he was deprived of the governorship, and declared incapable of holding any office in New Spain.

### AN AUTO-DA-FE.

On the 3d of February, 1668, the tribunal of the Inquisition celebrated an auto-da-fe in Santo Domingo, in which Peñaloso, the late Governor of New Mexico, was condemed to penance for his unrestrained language against the priests and lords Inquisitors. And thus we learn, from Shea's Peñalosa, the fate of one of the most enterprising, prominent and best of the early Governors appointed over New Mexico.

This deposed governor sought redress in Spain, but in vain. Quoting further from Shea's Peñalosa, he says: "His misfortune, or the terror and artifices of the Inquisition were so great, that up to the present time he was unable to obtain redress."

### FRENCH INTERFERENCE.

Chargined and mortified, Peñalosa joins with LaSalle in an unsuccessful attempt to incite a revolt in northern Mexico against Spanish government, for the purpose of obtaining possession of the mines for the benefit of France.

It is not impossible that the insurrection of 1680, of which we are about to speak, was quickened by Peñalosa and his French emissaries; as the latter was contemporaneous with his engagement with LaSalle.

Revolts of some proportions are recorded as occurring during the succeeding administrations, respectively, of Villanueva and Frecinio, the latter in 1675, but which revolt was suppressed in time; and death, the prison and slavery received their usual harvest.

### PUEBLO REVOLT OF 1680.

Following the repeated oppressions and suppressions to which the Pueblo or village Indians had been subjected since the European occupation of New Mexico, including the forcing of them into the mines to work, the suppression of the cachina, their favorite religious dance, and hanging them for witchcraft, with the administration of Otermein came an open and successful revolt, resulting in either death or exile to all Spaniards, including the priests. Governor Otermein, and such of the settlers of New Mexico as escaped the fury of the native people, retreated to El Paso del Norte. Santa Fe, and the Territory generally, was occupied and controlled by the Pueblos in 1680 The Pueblo Indians sought in every possible way to destroy and obliterate all evidence that their conquerors ever had an existence in the Territory. Thus the churches, vestments and public records were burned. Wives taken in Christian marriage were put away, and mines filled up or covered so far as possible. This occupation of New Mexico, with inconsiderable exceptions, was complete for fourteen years, notwithstanding the respective attempts of Governors Otermein, Ramirez, Cruzate and Pasada to regain the lost province.

Of Cruzate, his journal, under date of 1682, states that whenever he took prisoners he sentenced them to various terms of service, from ten years to life, and that he sold them to service in the mines, many of them having been taken to Paral, a mining camp in Mexico.

### THE RECONQUEST.

To Diego de Vargas in 1692–94, belongs the glory of reconquering the country, and bringing about that almost continuous peace and increased stability in the government which followed the ever present or threatened revolts of the Pueblo Indians during the preceding two generations. He at first brought with him from old Mexico an army of only 200 soldiers. Possessed of that strategy and generalship which belongs to every successful military leader, and the worldly wisdom of the diplomat, which enables him to take advantage of the discouragements and temper of the enemy, Vargas readily availed himself of the depressions and jealousies incident to twelve years of exhausting warfare with a great government which was determined to regain supremacy and revenge the death and destruction which had preceded. Thus, terms of submission were made with some of the pueblos already tired of war, and a few enlistments of friendly Indians were added from time to time to his small force. Other pueblos were brought to terms with slight resistance, while others like San Ildefonso and Jemez held out bravely, and stubbornly fought to the end. Victory and peace finally came in 1694, but not until Vargas had returned to Mexico and obtained a larger army—peace, upon stipulated terms, which, according to tradition and published statements thought by many to be true, involved an abandonment of the working of the mines; but with more or less of the usual pains and penalties upon the revolutionists.

Following the second expedition of Vargas came 1,500 emigrants, accompanied by supplies and domestic animals, and settled at Santa Fe and other important points. Garrisons were established according to the necessities. No attention apparently had been given to agriculture and the raising of supplies by the colonists; dependence was placed upon subsistence being brought to them from the adjoining provinces, and supplies were accordingly sent in considerable quantities. Famine followed, however, in 1696, and with it came great distress and considerable loss of life by starvation. Taking advantage of the situation, another revolt of the Indians followed, in which fourteen of the pueblos joined. Vargas was equal to the emergency, and again met the insurgents successfully, and with a vigorous enforcement of the penalties. About the same time charges were preferred against Vargas for speculating in the supplies furnished, and he was suspended from office. He seems, however, to have been vindicated by the home government, as he was knighted "Marquis de la Nava de Brazinos, conqueror, pacificator and settler of this kingdom of New Mexico," as a special recognition of his services. In addition to this distinguished consideration, Vargas was returned as governor. Except during suspension, he was governor of New Mexico from 1692 to 1704, in the spring of which year he died at Bernalillo, having been taken sick at that point, while returning from a successful expedition against the Apaches on the east of the mountains.

And thus closed the career of one of the most successful and distinguished of all the long line of Spanish and Mexican governors—numbering over seventy—who have occupied the chair of the chief executive of New Mexico.

The Marquis de la Nava evidently was well adapted to the rough vicissitudes of an hostile extreme frontier. He was a man of expedients, a diplomat, and at the same time bold and aggressive in war. Had he been a man of less versatile powers, at his distance from his base of supplies, with his small force, and in the face of the desperate hostility of the village Indians, the reconquest would probably have been deferred indefinitely.

The pueblos had become thoroughly desperate, had from the first united in a bold, grand effort, once for all, to free the country of their common oppressor and enemy.

The Marquis was immediately succeeded as governor by Juan Pais Huertado, his inspector general and confidential friend. Huertado served as governor frequently for brief periods between 1704 and 1735. He also held various other offices with credit, including general in the army of the Viceroy. He especially distinguished himself in three several campaigns against the Navajo Indians.

In 1706 the Duke of Albuquerque, whose name has come to be familiar, as a representative of one of the new commercial centers of the new west, became governor and captain general, and thus remained continuously and peaceably, except when temporarily absent, until 1710.

Jose Chacon Medina Salazar y Villasenor (El Marquis of Penuela) comes as a successor. It was under his orders as governor and captain general that Huertado made his campaigns against the Navajos. He is the governor who left his monument in the rebuilt San Miguel church. It is one of the landmarks well remembered by every tourist visiting Santa Fe. The inscription branded upon the beam facing the front entrance to this old church when translated reads: "Royal Ensign Senor Augustine Flores Vergara, a servant, constructed this edifice under the Marquis de Penuela, in the year 1710." Many of you have no doubt traced the original Spanish.

### A VICEROY GOVERNOR OF NEW MEXICO.

Thus far, we have been somewhat modest in giving the name and title of the governors and captains general of this kingdom and province of New Mexico. The following named person is recorded as governor, etc., of New Mexico in 1712, and who at the same time was Viceroy of New Spain, as Mexico was generally known in the early days. "Duke Fernando de Alencastre," is recorded as Viceroy from 1711 to 1716. The name with the titles, as appears written upon old documents in New Mexico, stands:

"DON FERNANDO DE ALENCASTRE NORENO Y SILVA,

duke of Lenaras, Marquis of Valdefuentes of Govea, Count of Portoalegre, grand commander of the order of Santiago of Portugal, lord of his majesty's bed-chamber, and of his council, his viceroy, lieutenant governor, and captain general of New Spain and president of the royal audience," etc. This name and title represents a very respectable personage, who was for a few weeks honored in New Mexico by becoming its chief executive. At the same time being Viceroy, the ruler with regular authority of New Spain and its provinces.

In these days of progress and lightning methods, we appreciate the importance of brevity and the shortness of human life, and promise not to repeat the name and title of future personages to whom I may refer, however distinguished. Nearly all of the governors of New Mexico, down to the Mexican Republic, possessed a name and title as long, or longer, than the one just quoted.

Following the long line of distinguished personages who have served New Mexico as its chief executive, we read names representing the ancestors of many families in the Territory to-day, as familiar to every community in the Territory as household words. Thus we have Mogollon, Balverde, Martinez, Estrada, Bustamente, Cruzate, Olavida, Mendoza, Roeval and Huemes.

In 1737, as recorded upon Inscription Rock near Zuñi, Don Martin de Lizo Cochea, bishop of Durango, made an official visit to New Mexico. All these names run through a period of thirty-seven years, and so far as appears to the contrary, years of peace and good government, and without important events to mark the period save an expedition in considerable force to the Missouri river in 1720, which upon arriving at the river

### WAS MASSACRED BY THE PAWNEES,

none surviving to tell the tale, except a single priest, who lived to return to Santa Fe to disclose the horrors to the families and loved ones of the unfortunates.

Tomas Velez Cachupin was governor for twelve years, between 1749 and 1773, and his administration seems to have been one of peace.

All the persons thus far named served as governors of New Mexico before even a trading post had been established at St. Louis, before a mission or settlement had been planted in California, before the birth of Daniel O'Connell, and before the war of the American revolution. Then follow other familiar names, as Urrisola, Marin del Valle, Mendinueta, Bautitsta de Ansa, Concha and Chacon, who served prior to 1800. In 1799 Gov. Chacon caused a census to be taken under royal decree, showing the population of the territory as settled at the missions to be, of Spaniards 23,769, and of Indians 10,369, being a total population of 48,138.

### THE FIRST ANGLO-AMERICAN

to visit New Mexico, so far as known, was a trapper named James Pursley, a carpenter by trade, and a native of Kentucky. Meeting Indians upon the Platte river near its source, probably not far from Denver, he learned from them of the Mexican settlements to the south. He finally set out with a party of Indians for Santa Fe, where he arrived in 1805, and remained until his death.

### THE FIRST MERCHANDISE BROUGHT WAS FROM ILLINOIS.

About the same time a merchant named Morrison, residing at Kaskaskia, Illinois, had learned through trappers of the settlements in New Mexico, reported by Indians. Resolved to learn something more of these remote people, this Kaskaskia merchant outfitted a French Creole with a small stock of goods, with which he started, going in boats by way of the Missouri and Platte rivers, and from thence with pack animals to Taos. The venture was a success on the part of the Frenchman. The latter failed, however, to account to his employer. He remained in the country, engaged in trade, became wealthy, and raised a large family of children and died some twenty years later. Thus, the first merchandise brought to the country was from Kaskaskia, sent by Mr. Morrison, and arrived at Taos in 1805.

About the same year the Santa Rita copper mines in Grant county were worked, and continued to be worked with profit for forty years. The pureness and superior qualities of the copper made it specially desirable for coining, and the entire yield for many years was purchased for the mint in the city of Mexico, whence it was freighted overland on pack animals.

Don Joaquin del Real Alencaster was governor from 1805 to 1808. It was during his administration that

### THE GOD-FATHER OF PIKE'S PEAK

found his way into New Mexico. Detailed by the United States Government to search for the head-waters of the river system running into Louisiana from the northwest, Captain Zebulon M. Pike, with fifteen others, were sent out in 1806 for the purpose. Pursuing his explorations into the mountains, he found himself upon a stream supposed to answer to some of the tributaries of the river system for which he was in search, and, believing he was in the bounds of the United Siates, went into winter quarters.

In time, however, Captain Pike and party were discovered by Mexican soldiers and informed that he was upon the upper waters of the Rio Grande, and within the bounds of New Mexico.

After a modest demand and some negotiations, Captain Pike and party consented to accompany the Mexican soldiers to Santa Fe. The latter outnumbered largely the command of Pike, and, like the philosopher that he was, he made the best terms possible.

### PIKE A PRISONER IN THE PALACE.

Appearing before Alencaster, the governor of the province, the latter took possession of Captain Pike's papers and placed him a prisoner on parole, with quarters in the old adobe palace. The papers were yielded with assurances that they should be returned on the arrival of the prisoners at Chihuahua, where Governor Alencaster deemed it his duty to send Captain Pike and party. The latter, however, were released at Chihuahua and escorted back to the United States after a few days, but the papers were not returned as promised, much to his embarrassment in the preparation of his journal.

Captain Pike evidently commanded the respect of the people as he journeyed through New Mexico, as he has ever been kindly spoken of by the old residents since the Anglo-American occupation. Among the attentions bestowed upon Pike was a dinner given him at Albuquerque by Father Ambrosio Guerra.

Upon the return of Captain Pike, he prepared, as best he could from material in hand and from memory, a journal of his expedition.

This was the first authentic information received touching upon the neighbors of the United States to the southwest, and constituted the basis out of which eventually grew the overland trade with Santa Fe, and our intimate commercial relations with northern Mexico.

### GOODS CONFISCATED AND THE OWNERS IMPRISONED AS SPIES.

It was upon the information thus given to the world by Pike, that a party of about fifteen, from St. Louis, headed by Robert McKnight, Beard and Chambers, outfitted a train of pack animals with merchandise, and followed the route of Pike, and arrived safely in about four months at Santa Fe.

Unfortunately for these pioneers in the overland trade, a revolution had just taken place, and they were all siezed as spies, their goods confiscated, and the whole party sent as prisoners to Chihuahua, where they were thus held for nine years, and until released under the influence of the revolution which resulted in

### MEXICAN INDEPENDENCE IN 1821.

It is interesting to note that among the last acts of the Spanish regime was to arrest and imprison, for a time, David Merriweather, of Kentucky, who subsequently became United States Senator from his own State, and was Governor of New Mexico from 1853 to 1857. Merriweather was at the time out with an exploring party, and came to Santa Fe as a matter of curiosity, and incidentally to learn something of the country.

Facunda Melgares was the last Governor under the Spanish regime, and was succeeded July 5, 1822, by Francisco Xavier Chaves, the first Governor under the Republic of Mexico. Chaves was the father of a large family of boys, two of whom—Mariano and Jose—subsequently served as Governors of the Territory. Another son was a member of Congress. Among the first acts and special features of the administration of Governor Chaves was the enactment of a public school law—the schools to be "established as soon as possible, according to the circumstances of the community"—and the encouragement of trade with the East.

### OVERLAND TRADE ESTABLISHED.

In 1821, Captain Beckwith and four men, while out on a trading excursion with the Comanches, fell in with a party of Mexican rangers and accompanied them to Santa Fe. Disposing of his small stock at large profits, this Indian trader confidently returned at once, and alone, to St. Louis, and in May of the next year, accompanied by Colonel Cooper and thirty men, and $5,000 in merchandise, returned by way of Taos to Santa Fe. Thus, in the summer of 1822, following the liberal policy that came with the Republic, also came the virtual establishment of the overland trade between the United States and Mexico, having Taos first, and Santa Fe afterwards, as the port of entry, and the great distributing point for Chihuahua, Durango, and all northern Mexico. Thus, with Mexican liberality came toleration, the establishment of direct commercial relations with the United States, and substantial progress over the ascetic and oppressive methods of Spanish rule.

The prisoners arrested as spies in 1812 having been released, McKnight engaged with Andrew Curcier, a Chihuahua merchant, in working the Santa Rita copper mines, of our Grant county; while Beard and Chambers immediately returned to St. Louis, and late in 1822 started for Santa Fe with a train of merchandise. They were caught in a violent snow storm at the Arkansas crossing, near what is now known as Dodge City, and lost their animals. Nothing daunting our courageous traders, they at once proceeded to *cache*, or in other words, to bury their goods, and then went to Taos, where a new stock of animals were obtained, and with them the *cached* goods were brought to Santa Fe the following spring, and disposed of at liberal profits, despite the great delay and expense attending the transportation.

### THE FIRST PRAIRIE SCHOONERS.

Up to 1824 all goods had been transported upon pack animals; this year heavy freight wagons were introduced from Pittsburg, and thus came to the front the "prairie schooner."

Franklin, now Booneville, upon the Missouri river, 900 miles away, was in 1832 made an outfitting point for caravans engaged in the Santa Fe trade. This remained only a few years, as Independence, a point 379 miles from St. Louis, up the river, superseded the point lower down the river about 1832, and maintained the trade for many years, and until Westport Landing (Kansas City) came in successful competition in 1848.

The first caravan of wheeled vehicles to cross the plains was brought to Taos in 1824 by Col. Marmaduke, of Missouri, and consisted of eighty men, twenty-five wagons and teams, and $30,000 in merchandise, besides a number of pack animals.

The same year James O. Pattie, of Kentucky, author of the "Narrative" bearing his name, came with a party of trappers to the Territory by way of the Platte river. The party were attacked by Indians as they came near the mountains and lost their goods. Tarrying for a time at Santa Fe, they obtained permits from Gov. Bartolome Baca, and proceeded to the Gila river, and for several months were engaged in trapping. The party finally reached the Pacific coast, where, after numerous adventures and hair breadth escapes from Indians and Mexicans, the older Pattie, father of the author, died. Mr. Pattie also visited northern and central Mexico, and upon his return home published his narrative, giving one of the earlier and interesting accounts of the country and of his adventures.

### ANGLO-AMERICAN PIONEERS.

Following the establishment of the overland trade, came in quick succession the Anglo-American pioneers, who have so prominently figured in the history and development of the Territory. Thus in 1824, among others came Charles Beaubien, one of the three first judges under the succeeding regime; Antoine Robideaux, trapper and merchant; Henry Connelly, merchant and governor (in 1861–65); Gervacio Nolan and Erving Young, a trader at Taos. In 1826–28 came Kit Carson, trapper, guide and soldier; Chas. Conklin, Hugh Stevenson, David J. Waldo, merchant at Taos and prefect of the county; John Sculley, a merchant at Santa Fe, and Col. James L. Collins, a trader.

In 1830–31 came Chas. Bent, the first governor under the United States, and appointed as such by Gen. Kearney. He was killed in the insurrection of 1847. Col. St. Vraine, and the old trappers Fitzpatrick and Bridger also appear; and Josiah Gregg, the author of "Commerce of the Prairies," the same year brought into Santa Fe his first caravan. Gregg started a consumptive in a desperate stage, and upon his first trip so far regained his health that he engaged in the trade continuously for several years.

In 1842 Bent and St Vraine engaged in trade at Taos, the outfitting of trappers being their chief business. The same year Albert Pike, now an eminent mason, visited Santa Fe, coming by a new trail from the State of Arkansas direct; also came Levi J. Keithly, member of the Legislature in 1851, still living at Las Vegas; also Lawrence L. Waldo (father of our late Chief Justice Waldo), who was killed at Mora in the insurrection of 1847.

In 1835 came Richard Dallum, merchant; Stephen Lee, a distiller, killed in the insurrection at Taos, and the venerable Samuel B. Watrous, a ranchman, still residing at the railway station in Mora county bearing his name. Mr. Watrous first settled at the New Placers in Santa Fe county.

### VICAR MARTINEZ INTRODUCES A PRINTING OFFICE AND SCHOOLS.

The Rev. Antonio Jose Martinez, a Mexican and philanthropist, who established a school at Taos in 1826, was subsequently made vicar of Taos; the same year he brought to the territory the first printing office, and published his own school books and the first newspaper ever printed west of St. Louis.

Col. Albino Perez, of the Mexican army, and recognized for his culture and ability, was appointed governor of New Mexico at this time. Taxes, as we all know, are inseparable from all well regulated governments.

### A BRACE OF COUP D'ETATS.

In the enforcement of a new revenue system, the opponents, including a predecessor of Gov. Perez, jealous and hostile, found a fertile excuse for inspiring and organizing an opposition, and which, whether intended or not, early in August of 1837, culminated in a formidable revolution, and in the assassination of the governor and principal officers, among others. According to the original manuscript of the proceedings, a public meeting was held a few days later in the interest of order, at which meeting a number of the prominent citizens are named as present. Loyalty to the home government was declared, and a provisional governor elected in the person of Jose Gonzales, a person of great popularity, and asserted by some to have been a Pueblo Indian. A committee was appointed to prepare an address, and to proceed in person to present the same to the supreme government. In the meantime, as resolved, all were to yield obedience to Governor Gonzales, until such time as the committee could report.

### GOV. MANUEL ARMIJO,

whose name appears as one of the committee, and who ten years before had served for a time as governor, proceeded to organize against the provisional government, and in January, 1838, appeared at Santa Fe in force and drove Gonzales from the capitol. Following the retreating governor, the latter was overtaken and captured at Santa Cruz by Armijo and summarily shot, a half hour being allowed for confession.

Armijo having effected his coup d'etat, then assumed the office of governor, and finally succeeded in having himself appointed. Armijo gave stability to the government, at least it was free from revolt, and held the office most of the time up to the occupation by the United States, at which date he retreated with a few soldiers to Mexico.

In 1848 General Armijo was captured near Chihuahua by General Price, and paroled, after which he returned to his home at Limitar, where he remained until his death, 1854. He was married but had no children except an adopted daughter. There was a numerous family of brothers and sisters, some of whom, with their descendants, still reside in Bernalillo county; they are generally intelligent and influential people, frequently called to positions of trust. Several of the brothers and descendants are wealthy.

### OTHER GOVERNORS.

The governors of the territory during the Mexican regime, not otherwise named, were Alejo Garcia Conde (Mexican boundary commissioner in 1850) *ad interim;* Antonio Viscari, who effected a treaty with the Navajo Indians about 1825; Antonio Narbona, a Canadian by birth; Santiago Abreu, also an alcalde of the first instance in 1837. Governor Abreu, with his brother Ramor, were killed in the insurrection of 1837. The Abreus were members of the Masonic fraternity, and are spoken of as good men, liberal and progressive. A number of their descendants, who reside in the northern counties, are good citizens. Francisco Sarracino was governor in 1833–35, and resided near Albuquerque, until his death in 1850. Antonio Sandoval, Pedro Muñoz and Mariano Martinez, each acted as governor for a few months, between 1840 and 1845.

### OTHER PIONEERS.

During 1837–39, John A. Sutter, who subsequently was the first to discover gold in California, and William S. Messervy, appear engaged in the Santa Fe trade. Messervy was secretary of the territory in 1853–54. While serving as governor in 1854 he was specially active in organizing and contributing territorial militia in the war upon the Jicarilla Apaches, and in the end made the punishment of the Indians effective, and which ever after proved effective.

In the forties, previous to the Anglo-American occupation, there came to New Mexico many who will be readily remembered by all old residents of the Territory, some of whom are still living in New Mexico, and nearly all of whom were engaged in merchandising. Of these I have in mind Luciene B. Maxwell, trapper, hunter and trader, and of land grant fame; Reuben Genty, merchant at Santa Fe; Joab Houghton, the first Chief Justice of the Supreme Court; Eugene Lietensdorfer, S. J. Spiegelberg, James and Samuel McGoffin, James L. Johnson, Henry O'Neil, Ennis J. Vaughn, merchant at New Placers, and the first sheriff of Santa Fe county; James J. Webb, Preston Beck, Samuel Wethered, Peter Joseph, most of whom were engaged in the Santa Fe trade. F. X. Aubrey, guide and trapper, came during these years. He will be remembered as winning a wager of $10,000 that he could ride on horseback from Santa Fe to the Missouri river within six days. Col. John C. Fremont also visited Santa Fe in the forties. In 1841–42 occurred the Texas-Santa Fe expedition, under General McLeod, of the Texas army. Their capture and march to the City of Mexico, by order of Governor Armijo, have been vividly told by George Wilkins Kendall.

In 1846, August 19, occurred the Angle-American occupation of New Mexico. The old "Adobe Palace," the capital building of the old Spanish and Mexican regime, being formally surrendered by Acting Governor Juan Bautiste Vigil y Alarid to General Stephen W. Kearney, commanding the United States forces, this without shedding a drop of blood or the firing of a musket. For this peaceable occupation, much is due to the practicable spirit and influence exercised by Don Donaciana Vigil, in accepting the inevitable. Vigil was appointed the first secretary and the second Governor of the Territory. The only force showing any opposition was that under Gen. Manuel Armijo, stationed at Apache cañon, which, upon the approach of General Kearney, dispersed and returned to their homes, General Armijo, with a small command, as before stated, retreating down the Rio Grande to Old Mexico.

## RETROSPECTIVE.

New Mexico had made some progress since liberty was declared in 1821, and before the American occupation in 1846. It may surprise more favored localities that its progress was not greater. It was probably all that the situation warranted, considering its isolated position.

The overland trade, in which the pioneers above named were all engaged directly or indirectly, and which constituted the chief source of revenue, and chief business of New Mexico, as the great distributing point for the adjacent States of Mexico, amounted in 1846 to $1,750,000, and a tonnage of goods transported of 5,500, traversing a distance of nearly 900 miles. It gave, in round numbers, employment to 5,000 men, 2,000 wagons, and 20,000 animals. The entire population of the Territory was then about 60,000.

At the same date when commerce with the States had grown to these proportions, and increased stability had been given to native industries, there was nothing in which New Mexico had shown more intelligent progress and independence withal, since "God and Liberty" had been adopted as the nation's motto, than in the act that the local priesthood had been appointed from among the people of the Territory; from among those with whom they were of kin and in direct sympathy. A few public schools had been established where there were none before; private schools had been established by Vicar Martinez at Taos; by Padre Leyva at San Miguel, and other priests in the Territory were engaged in giving instruction to the youth of the land. These constituted the primary training schools for the priesthood, and afforded the opportunities for the Mexican youth to demonstrate his capacity for learning, and for priestly orders. The priesthood drawn from the mendicant friars of foreign lands, and placed over the churches of the Territory during Spanish rule, had thus been entirely supplanted by natives.

Time admonishes me that I must close, but it would be unjust to do so without giving a moment to the consideration of this question, "Why did not greater results follow the achievements of the pioneers of New Mexico?" This question was most fully and logically answered in the very able address delivered at the opening of this exposition, by our distinguished fellow citizen, the Hon. Tranquilino Luna, himself a son and worthy representative of the most distinguished of the Hispano-American pioneers. In one word, it was the environment, isolation, stifled genius and killed enterprise. Out in the great world events were transpiring which changed the destiny of mankind.

The American revolution, which by its enunciation of principles emancipated the world, was an accomplished fact. Liberty had unfurled her banner, and the right to freedom of person, of speech and of the press, had been achieved. before the fact that there was such a contest, had ever been heard of in these mountains. The brave sons of the brave pioneers were practically imprisoned, and as our distinguished delegate declared in his address, "the wonder is not, that they did not advance, but that they survived." But behold the change! The magnetic wand of steam and iron has broken down the barriers of mountains, and joined New Mexico with the world.

In conclusion, I crave permission to address myself to

## THE YOUNG MEN OF NEW MEXICO.

Look about you for a moment and observe your exceptional advantages. New Mexico is the center or hub of the railroad system of the Rocky Mountain States, and of the great Southwest. One spoke touches Kansas City and St. Louis, and another Denver, a third Salt Lake, still another Los Angeles, San Diego and the whole Pacific coast, another Guaymas and the west coast of Mexico, another Chihuahua and Central Mexico, still another New Orleans and all the riches of the Gulf States. What can you send to them in exchange for all the infinite variety of articles of utility and luxury which they stand ready and eager to barter with you? Look only at two articles in this magnificent hall; use but two words, more potent to conjure with than any "open sesame" of the magician—coal and iron!

## UNLIMITED FUEL AND UNLIMITED METAL.

You can unite here the practical sense of the Anglo-Saxon with the subtle brain and deft hand of the Latin race; revive the old dreams of glory; gird yourselves for the contests and victories of peace; let the light of a thousand forges illuminate your hills; and let the loom and spindle sing the songs of thrift and plenty.

The distance from the world's great manufacturing center is such protection as no empires can grant or disturb. To unlimited coal and metal, you add unlimited wool and leather—with beef and wheat to feed your million operators. O young men of New Mexico, look about you! There never was such a field for enterprise! If the world's gratitude is due to the agriculturist who causes two blades of grass to grow where but one grew before, what a crown will be laid for you when you build a forge or establish a factory.

If it was glory to organize and lead into battle a regiment of a thousand men, how much greater the glory to pay, over your own counter, a thousand workmen at the end of every week; to provide sustenance for a thousand families Labor is king! Up men, and at it!

The brave pioneers from Spain discovered the country, and rendered its settlement possible; the no less brave pioneers from east of the Mississippi made possible what we behold to-day. You are the pioneers of the greater future; may the glory of your achievements as much exceed theirs as a locomotive excels a carreta, or a Winchester rifle excels the bow and arrow of an Indian.

# INDEX.

*Page.*

- Agriculture, Horticulture........ 48
- Alfalfa........ 109
- Altitudes........ 33
- Amola........62, 233
- American occupation........29, 249
- Aboriginal civilization and conquerors..... 189
- Arable area........ 49
- Area and boundaries........ 28
- Assessment and taxation........ 79
- Aztlan........21, 189, 235
- Anthracite coal........ 85
- BERNALILLO COUNTY.
  - Agricultural valleys........ 91
  - Albuquerque city........ 91
    - Growth and development........ 92
    - Hotels and institutions........ 92
    - Railway system........ 91
  - Bernalillo valley and village........ 94
  - Coal........102, 87
  - Canaigre, analysis........ 96
  - Education........ 95
  - Grape and fruit culture........ 97
  - Indian industrial school........ 93
  - Indian pueblos........ 94
  - Jemez springs........73, 94
  - Mines and mining........ 101
  - Sheep and cattle ranges........ 91
  - Wheat........ 100
- Business centers........ 29
- Cathedral de San Francisco de Asisi........ 149
- Cañaigre........62, 96, 109
- Capital edifice (See FRONTISPIECE).
- Civic societies........ 81
- Coal and iron........ 35
- Coal and coke fields........ 85
- COLFAX COUNTY.
  - Geographical........ 105
  - Cattle ranges and agriculture........ 105
  - Coal and coke........87, 106
  - Mineral products........ 105
  - Raton, its school........ 105
    - Machine shops........ 105
    - Newspapers........ 105
  - Springer, the county seat........ 105
  - Wealth, enterprise and hospitality...... 106
- Comparative value of coals........ 183
- Counties and county seats........ 29
- Commerce—early caravans........ 163

*Page.*

- DONA ANA COUNTY.
  - Geography and extent........ 107
  - Alfalfa for forage........ 109
  - Agriculture and horticulture........ 107
  - Cañaigre, analysis........109, 110, 111
  - Grape culture........ 108
  - Gypsum and adobe bricks........ 112
  - Mines........ 113
  - Money value of products per acre....... 112
  - Pastoral........ 112
  - Railroads........ 116
  - The famed Mesilla valley........ 108
- Education........ 78
- Fruit tree belt........56, 100
- Fruit, highest adaptation to........ 48
- Governors (See HISTORIC NEW MEXICO)... 235
- GRANT COUNTY.
  - Geography and topography........ 118
  - Coal........ 87
  - Commercial interests: Lordsburg, Silver City, Carlisle, Deming and Hudson's Springs........122, 123, 124
  - Grazing lands........ 118
  - Mines and mining........ 118
- HISTORIC NEW MEXICO (Also see COUNTIES)........21, 189, 235
  - Aboriginal civilization........ 189
  - American occupation........29, 249
  - Anglo-American pioneers........ 247
  - First merchandise brought overland... 245
  - Zebulon M. Pike........ 245
  - Overland trade established........ 246
  - First prairie schooners........ 247
  - A brace of coup-de-etats........ 248
  - Early Franciscan monks........ 191
  - Early explorations........22, 235
    - Cabeza de Vaca........ 235
    - Mineral discoveries........ 38
  - Españo-American pioneers........ 239
    - Pedro de Peralte........ 239
    - Jealous of machinery........ 240
    - Count of Peñalosa........ 241
    - Expedition to Mischipi river........ 241
    - The Inquisition........ 241
    - An Auto-da-fe........ 242
    - Oppression of the Pueblo Indians.. 242
    - Pueblo revolts of the 17th century 242
    - Otermein........ 242

- HISTORIC NEW MEXICO.
  - Españo-American pioneers... 239
    - Diego de Vargas... 242
    - Diego knighted Marquis de la Nava. 243
    - The reconquest... 242
    - Peace... 243
    - Huertado's expeditions against Navajo's... 234
    - San Miguel church... 244
    - Vicar Martinez establishes a school and printing office... 247
    - First newspaper... 247
  - Mexican war... 249
- Homestead exemptions... 65
- How to reach given points (See TABLES OF STATIONS AND MINING DISTRICTS)....9, 13
- Indian Industrial schools...93, 148
- Inquisition...94, 241
- Irrigation... 49
  - Horace Greeley on... 50
- LINCOLN COUNTY.
  - Geography and resources... 125
  - Mines: Nogal, Bonito, White Oaks, and Red Cloud districts...125, 130
  - Stock raising... 130
- Live stock—profits in cattle... 58
  - Cattle... 57
  - Sheep... 60
  - Horses... 61
- Land grants... 81
- Legend of Montezuma—illustrated... 5
- Map of New Mexico... 13
- Map of Santa Fe county... 199
- Market gardening... 52
- Militia, Territorial... 25
- Medicinal springs; analysis...73, 76
- Minerals and precious stones... 38
- Mica...140, 178
- Military headquarters district N. M... 144
- Mining camps... 9
- Mines and mining (Also see COUNTIES).... 39
  - A wonderful mine... 42
  - Profits of smelting and reducing... 46
- Modernizing... 81
- MORA COUNTY.
  - Geography and area... 131
  - Agriculture... 133
  - Mineral wealth... 134
  - Stock ranges... 131
  - Sheep... 132
  - Scenery... 134
  - Water courses... 132
  - Wheat... 133
- Newspaper progress... 82
- Nurseries...55, 99, 139
- OPPORTUNITIES, in brief... 82
  - Coal and iron... 35
  - Grapes and wine...97, 108, 220
  - Manufacturers... 82
- OPPORTUNITIES.
  - Market gardening... 22
  - Money value of products per acre... 112
  - Mines (See COUNTIES)... 38
  - Nurseries...55, 99, 139
  - Profits of milling and smelting... 46
  - Profits of cattle raising... 58
  - Soap from the Palmillo... 62
  - Tanning of leather... 62
- Palace, Old Royal... 193
- Pastoral (See DONA ANA COUNTY)... 112
- Personal to invalids... 69
- People and patriotism... 29
- Population by counties... 31
- Public lands... 65
- Public schools... 78
- Railroads, present and prospective... 26
- Railway and telegraph stations, and notes of special interest... 13
- Religion... 77
- See of Santa Fe... 77
- Protestant denominations... 77
- Rio Grande Val'y (See CENTRAL COUNTIES)
- RIO ARRIBA COUNTY.
  - Agricultural and horticultural... 136
  - Amargo coal... 89
  - Geography and topography... 135
  - Historical and archæological... 135
  - Headstone mining district... 140
  - Mineral wealth... 137
  - Mica... 140
  - Rio San Juan of the Northwest... 138
  - Water systems... 138
  - Temperature and crops... 139
  - Society... 139
  - Stock, wool product... 139
- SAN MIGUEL COUNTY.
  - Area, timber... 205
  - Agricultural and horticulture... 206
  - Las Vegas, a commercial center... 208
    - Newspapers... 208
    - Schools and churches... 208
    - Hot Springs and bath houses.....75, 209
    - Railroads... 209
  - Mining... 207
  - Stock ranges and stock growing... 207
- SANTA FE CITY AND COUNTY.
  - Academy of Our Lady of Light... 200
  - Agriculture and horticulture... 162
  - Aboriginal civilization and their conquerors... 189
  - Ancient pueblos... 23
    - Bandelier's letter... 199
  - Bird's-eye view of Santa Fe... 188
  - Bishop's Garden, the... 151
  - Commerce, caravans... 163
  - Coal, anthracite and bituminous.....85, 182
  - Diego de Vargas, reconquest... 192
  - Educational... 146

- SANTA FE CITY AND COUNTY.
  - Early Franciscan monks...... 191
  - El Ojo del Xigante...... 161
  - First Protestant societies...... 147
  - First Protestant church—illustration.. 147
  - Indian school...... 148
  - Manufacturing resources...... 145
  - Maps, old pueblos...... 199
  - Mines and mining...... 166
  - Mica...... 178
  - Old mines...... 166
  - Old San Miguel church and college..... 152
  - Plaza, the, and daily concerts......151, 180
  - Points of interest...... 151
  - Penitentiary......80, 199
  - Railway system...... 164
  - Religious......77, 146
  - Revolt of 1680...... 192
  - Revolt of 1837...... 192
  - SANTA FE, the oldest capital city...... 196
    - Military headquarters...... 144
    - See of—Cathedral—illustration..... 149
    - Hotels and institutions...... 148
    - A residence city...... 163
    - St. Vincent's hospital...... 157
    - A sanitarium...... 154
    - Tourists' shrine...... 148
    - Temperature and humidity...... 158
- SIERRA COUNTY.
  - Agricultural possibilities...... 212
  - Black range, geological......213, 214
  - Geographical...... 211
  - Hillsboro, the county seat...... 211
  - Kingston...... 212
  - Mesas adapted to stock...... 211
  - Mining resources...... 214
  - Reduction works...... 43
  - Towns and distances...... 211
- SOCORRO CITY AND COUNTY.
  - Historical...... 216
  - Agriculture and adaptability...... 220
  - Bullion product...... 216
  - Billing smelter...... 261
  - City of Socorro, a business center...... 225
    - Schools and court house...... 226
  - Coal...... 217
  - Latent resources...... 223
  - Stock raising...... 224
- Sanitarium...... 66
- SANITARY CONDITIONS, for the colonist..... 67
  - Personal to invalids...... 69
  - How to reach any point......13, 18
  - Mineral and medicinal springs...... 72
  - Diseases in which they are beneficial... 72
  - Hotels and bath houses...... 73
  - Hospital of St. Vincent...... 157
- ecurity for life and property...... 25
- Soap from the Palmillo...... 62
- STATISTICS:
  - Relative value of coals...... 183
  - Analysis of mineral springs......73, 77
  - Analysis of coals......85, 89
  - Analysis of cañaigre...... 96
  - Altitudes...... 33
  - Cereals, quality and yield...... 49
  - Coal fields and products...... 35
  - Profits of smelting and reducing ores, 46
  - Profits of cattle raising...... 58
  - Profits of sheep raising...... 60
  - Profits of wine product...... 98
  - Prices of market gardening...... 52
  - Population by counties...... 31
  - Relative death rate...... 69
  - Temperature, rainfall and humidity, 70, 158
  - Vegetable yield......52, 105, 109, 227
  - Wool product of the Territory...... 61
- Summary for the industrious and thrifty... 116
- Sunshine...... 68
- TAOS COUNTY.
  - Climate...... 228
  - Fruit culture...... 227
  - General...... 228
  - Mines...... 229
  - A sanitarium, Joseph's Ojo Caliente... 75
  - Soil and cereals...... 227
  - Who the people are...... 228
  - Wheat and yield...... 227
- Tables of railway stations and distances......13, 18
- Tables of mining districts and camps......9, 12
- Tanning properties of cañaigre...... 62
- Territorial exposition, annual...... 81
- Timber...... 66
- Topography and mountains...... 31
- TOURISTS—Railway stations and points of interest......13, 18
  - Hotels at Springs...... 73
  - (See COUNTIES, HISTORICAL and SANITARIUM.)
  - Personal to invalids...... 69
  - Points of interest at Santa Fe...... 151
- VALENCIA COUNTY.
  - Archæology...... 234
  - Farms...... 233
  - Flour and grist mills wanted...... 233
  - Lumber...... 233
  - Mines and mining...... 233
  - Salt lakes...... 232
  - Stock raising and ranches...... 232
  - Soap from Amola......62, 233
- Water courses...... 34
- Wheat......49, 100, 133, 227
- Wool product......61, 82

# AZTLAN

*Is the title of a book containing numerous essays and papers upon the*

History, Resources and Attractions of the Territory of New Mexico and its ancient Capital City, Santa Fe.

*The subject matter is from the pen of*

**HON. WM. G. RITCH.**